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REFERENCE HANDBOOK

of the

DISEASES *of* CHILDREN

For Students and Physicians

BY

PROF. DR. FERDINAND FRÜHWALD

CHIEF OF CLINIC IN THE VIENNA POLYCLINIC

EDITED, WITH ADDITIONS, BY

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With 176 Illustrations

PHILADELPHIA AND LONDON

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EDITOR'S PREFACE.

THE *Kompendium der Kinderkrankheiten* of Prof. Dr. Ferdinand Frühwald, of Vienna, has achieved such a notable success abroad that the present English translation has been undertaken with the hope that it may at least broaden the point of view and add something of value to an already admirably well-rounded native literature on this important branch of medicine. To this work the author has brought the fruits of more than twenty years of unusual experience as a teacher and practitioner in his specialty.

The translation follows faithfully the original text, only such changes having been made as were necessary for greater clearness of expression or for the differences in practice pursued in our own country. Wherever these changes or additions have departed from the spirit of the original text they have been indicated by bracketing as editorial notes.

Under the headings of *treatment* it has been the editor's aim to present the author's practice substantially without change, so as to make the work a complete epitome of pediatric therapeutics as at present in vogue in Vienna, which, as a medical center, stands in the front rank of the German schools.

By special arrangement with the foreign publisher, Franz Deuticke, of Leipsig and Vienna, the illustrations are printed from the original plates used in the German edition; while a few extra plates from accredited American sources have been added for further elucidation of the text. The alphabetical order of arrangement is rather novel in a work of this character, but the numerous cross-references render it extremely convenient for ready reference without the necessity of consulting a special index.

THOMPSON S. WESTCOTT.

JANUARY, 1906.

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PREFACE.

AFTER more than twenty years spent in study and teaching I have decided to bring out the present work to supply the lack of a compact teaching manual.

I hope, in its present form, it will meet the demands of my colleagues, as the individual diseases, although briefly presented, are discussed as exhaustively as possible.

In order to render the compendium useful as a practical reference book, the alphabetical classification has been selected.

While the most important pathologic findings have been lightly referred to, special stress has been laid on the symptomatology, which has been rendered as comprehensive as possible; for without a thorough knowledge of the symptoms it is impossible to make a diagnosis or utilize it practically.

Prophylactic, therapeutic, and dietetic procedures are duly discussed in connection with each disease; and under treatment and indications for treatment the most recent achievements in therapeutics will be found described at length. Of the newer preparations, however, I have mentioned only those which I am in the habit of using in my hospital and private practice, and which have also been tested elsewhere.

Believing pictorial representation to be a great aid in the recognition and understanding of many diseases, I have introduced illustrations of the rarer conditions, which were made from photographs, sketches from nature, or diagrammatic drawings; and these illustrations, which are quite numerous, add not a little to the practical value of the work. The cases are almost all taken from my clinic at the Vienna Poliklinik; a few cuts are taken from other works, and in every such instance the source has been indicated. Many of the photographs and all the diagrammatic drawings and

sketches from nature were selected and made by my assistant, Dr. Norbert Swoboda, to whom I am indebted not only for material assistance in my own work, but also for kindly undertaking the laborious and time-consuming task of reading proof. My assistants, Dr. Emil Wechsler and Dr. Karl Mohilla, have also rendered much valuable assistance in proof-reading, and have earned my heartfelt and lasting thanks.

In order to escape any sins of omission in describing the symptoms and clinical course of the individual diseases the following text-books and periodicals have been freely utilized —both for study and to supplement my own experience of many years:

Vorlesungen über Kinderkrankheiten, by Prof. E. Henoch; *Lehrbuch der Kinderkrankheiten*, by Gerhardt-Seifert; *Lehrbuch der Kinderkrankheiten*, by Prof. Dr. Ph. Biedert and Docent Dr. R. Fischl; *Lehrbuch der Kinderkrankheiten*, by Docent Dr. L. Unger; *Grundriss der Krankheiten des Kindesalters*, by Dr. J. Lange and Dr. M. Brückner; *Semiotik und Diagnostik der Kinderkrankheiten*, by Prof. N. Filatow; *Vorlesungen über spezielle Therapie innerer Krankheiten*, by Profs. Ortner and Frühwald; *Die Anwendung der Bakteriologie in der praktischen Medizin*, by Prof. Dr. R. Kretz; *Atlas der Hautkrankheiten*, by Prof. Dr. F. Mračeк (see Saunders' American Edition); *Zentral-Blatt für Kinderheilkunde*, by Dr. E. Grätzer; *Monatsschrift für Kinderheilkunde*, by Dr. A. Keller, and many original articles and abstracts from a large number of medical periodicals.

Finally, let it be distinctly stated that my compendium is not designed to take the place of a text-book; it is rather intended to prepare and stimulate the student for the study of text-books and to serve as a convenient clinical guide. I shall feel amply repaid for the many years that I have devoted to the study of pediatrics if I have succeeded in this undertaking, and my manual meets with the recognition and patronage that I hope for at the hands of my colleagues.

THE AUTHOR.

REFERENCE HANDBOOK

OF THE

DISEASES OF CHILDREN.

Abscess, Cerebral. See ENCEPHALITIS, ACUTE.

Abscess of Brain. See ENCEPHALITIS, ACUTE.

Abscess, Peritonsillar (*Quinsy Sore Throat; Phlegmonous Angina*).—In the connective tissue of the tonsils, or, more frequently, between the anterior pillar of the fauces and the tonsil, an inflammatory process develops which leads to the formation of an abscess.

Repeated attacks of catarrhal or lacunar angina are predisposing factors, and in many individuals peritonsillar abscess recurs frequently. The *symptoms* of the disease are high fever and intense pain on swallowing, until the patient is not even able to swallow his saliva, which dribbles continuously from the mouth; it often has an offensive odor and is tinged with blood. The extreme angina also interferes greatly with speech and respiration, so that the patient suffers from dyspnea, especially when the head is low. Opening the mouth is difficult and extremely painful; the mucous membrane of the mouth and palate is intensely inflamed, swollen, and edematous, while one of the tonsils, or one of the anterior pillars, is greatly swollen and bulges into the oral pharynx.

After an interval of several days, or even as long as a week, the examining finger is able to detect fluctuation. The abscess either ruptures spontaneously or requires opening with the knife. Incision is urgently indicated whenever the local

symptoms, especially the dyspnea and absolute inability to take food even in liquid form, become alarming; and, owing to the increasing trismus, there is reason to fear that the tonsil may soon become inaccessible to the knife. In the beginning of the disease ice poultices and ice pills should be used; the mouth should be cleansed frequently as long as it is possible to do so; and cold liquid food should be given, if necessary, through a tube.

If the application of cold causes pain, warm poultices may be applied to the throat, and the pharynx irrigated for considerable periods at a time with warm teas made from mallow, sage, and marshmallow leaves. When the patient knows that he is predisposed to this disease, he should begin to chew antiseptic tablets at the first appearance of the well-known symptoms, in the hope of thus arresting the process early.

Abscess, Retropharyngeal. See RETROPHARYNGEAL ABSCESS.

Achondroplasia. See NANISM.

Acne.—Seborrhea, and particularly the associated formation of comedones, lead to the development of acne through inflammation of individual sebaceous glands. Comedones usually occur in children during the age of puberty and are found chiefly on the face and back and front of the chest. Occasionally the occurrence of extensive crops of acne lesions is associated with constitutional diseases, such as scrofulosis, anemia, chlorosis, and other forms of cachexia due to a variety of causes.

In most cases the acne lesions undergo suppuration; sometimes they dry up and the inflammatory symptoms subside. The *treatment* should be directed chiefly to the removal of the causal factors whenever that is possible. In order to prevent suppuration, comedones should be removed with a watch-key or comedo-expressor, and the skin cleansed afterward with an alkaline soap or dilute tincture of soap (Hebra), followed

by washing with warm water. Suppurative acne lesions must be opened and covered with a disinfective ointment. A great variety of ointments are recommended for use during the night.

℞ Sulphur. præcip.,
Kal. carbonat.,
Glycerin.,
Aq. lauroceras.,
Spirit. vini gallic., āā 10 (ʒiiss.).
M. ft. pasta.

℞ Bismuth. subnitrat.,
Hydrarg. præcipit. alb.,
Ichthyol, āā 2 (gr. xxx);
Vaselin, 20 (ʒv).
M. ft. unguentum.

Or,

℞ Sulphur. depur.,
Calcis sulphurat.,
Calc. phosphor., āā 25 (ʒvi).
M. ft. pulv. subt.
Sig. To be stirred with a little water and applied overnight.

The following lotion is also recommended:

℞ Sulphur. præcipit., 15 (ʒ ss);
Camphor, 12 (ʒ iij);
Aq. destil., 250 (f ʒviij).—M.

or the parts may be cleansed with a 2 per cent. solution of boric acid, sapodermin, or a 10 per cent. solution of thigenol soap.

These remedies suffice in most cases; if the disease resists such ordinary treatment, the advice of a specialist must be sought.

Addison's Disease.—This is a rare disease in children. The most characteristic features are the increasing anemia and lassitude, gastric phenomena, and a macular or diffuse bronze discoloration of the skin. Gradually there develop emaciation and disturbances of the digestive organs and nervous system, manifested by headache, vertigo, syncopal attacks, and convulsions. The *cause* of Addison's disease in the majority of cases is found in chronic [tuberculous—Ed.] disease or degeneration of the suprarenal bodies. The malady often lasts for years and usually terminates fatally. In the

treatment special attention must be given to improve the strength. Internally, organotherapy in the form of the administration of suprarenal extract has been found most useful.

Adenoid Vegetations.—The same *causes* which in many children produce hypertrophy of the faucial tonsils also cause enlargement of the pharyngeal tonsils of sufficient degree in some cases to produce more or less complete occlusion of the rhinopharyngeal space. These pharyngeal tumors, especially in young children, are of a soft, spongy consistence; in older children they are hard and fibrous, and are often associated with hypertrophy of the faucial tonsils.

Symptomatically the disease manifests itself chiefly by interference with respiration and, especially in younger children, by constantly recurring catarrh of the rhinopharyngeal mucous membrane, by anorexia, and by a tendency to vomiting and headache. All these symptoms are also produced in other acute diseases affecting the respiratory mucous membranes, and by any change in the weather, especially dampness; when the symptoms already exist, they are aggravated by these causes. In many cases adenoid vegetations, probably owing to some basal infectious condition, give rise to remittent and often protracted fever (see GLANDULAR FEVER). Clinically the most important symptoms are those of mechanical interference with breathing. These children are mouth-breathers, snore at night, and are subject to attacks of asphyxia, especially in the recumbent position. Owing to the insufficient oxygenation of the blood, sleep is much disturbed, and the child attempts, by constantly changing his position, to render breathing easier. On awaking, the lips are covered with brownish scales of dried secretion from the mouth; the odor of the breath is often fetid. The voice is nasal and often hoarse; and owing to the primary disease, recurrent attacks of nasal, pharyngeal, and laryngeal catarrh are frequent.

A frequent sequel of adenoid vegetations is the occurrence of inflammation of the middle ear. In older children, owing to pressure on the Eustachian tube, partial deafness is not infrequently produced. The habit of breathing through the

mouth lends a stupid appearance to the face, and in rachitic children there may be associated with this a deformity of the bones of the face and thorax. It has never been decided whether the feeble-mindedness which is frequently observed (arrest of development of the intelligence) is the result of the deafness or of the pharyngeal disease. Certain it is that, in addition to secondary anemia, various forms of malnutrition and nervous disturbances occur in this disease, among which

FIG. 1.—Typical appearance in adenoid vegetations: Boy ten years old.

should be mentioned particularly pavor nocturnus, incontinence of urine, and, occasionally, chorea.

A positive *diagnosis* of adenoid vegetations is readily made by detecting their presence by digital examination with the disinfected finger or by means of rhinoscopy.

The *treatment* is both palliative and radical. Operative interference is indicated when the symptoms of the disease have become so severe as to cause permanent disturbances; it is not severe and is not contraindicated even in the youngest children. Recurrence of the growths after operation occasionally is observed.

Palliative treatment comprises various measures to relieve the obstructed nasal respiration. For this purpose the nose should be irrigated once or twice a day with a lukewarm 1 per cent. saline solution, or a solution of equal parts of sodium chlorid and sodium bicarbonate, or of Haller iodsalz (in the strength of one knife-point to a cupful of lukewarm boiled water), or Haller iodwasser (one tablespoonful to the cupful), using the nasal douche [or "nose-can"], with the head thrown back. Silver nitrate solution (0.2 : 100), applied twice a day, appears to be of some value; cotton tampons, saturated with the solution, are introduced into the nasal passages and then expressed by compressing the nose. Painting the nasopharynx, through the mouth, with a 10 per cent. iodin and glycerin solution; the instillation, several times a day, of from 5 to 10 drops of a solution of adrenalin hydrochlorid (1 part of a 1 : 1000 solution to 9 parts of distilled water); the instillation of a few drops of a 10 per cent. solution of borated vaselin, or of menthol 0.2 to 10 of liquid vaselin, or painting with similar vaselin ointments, are also indicated. It is important that the child should sleep with the head high. The bedroom should not be too warm, and the humidity of the air should be artificially increased. An important factor in the cure of adenoid vegetations, even after operative removal, is a sojourn during the summer-time on the shore of the North Sea, and in the spring and fall at some bathing resort on the Adriatic. Sometimes a drinking-cure at some iodin spa, such as Hall, Darkau or Heilbrunn, and Krankenheil Tölz in Bavaria, is indicated. [In the United States no better place can be found for strumous and tuberculous children during winter and spring than Atlantic City or Cape May, on the New Jersey coast. Children also do well at the mountains. In the summer it is immaterial where children go, so long as they leave the cities and get out into fresh air and receive pure milk and a wholesome country diet. In England, children who can endure cold and whose reactive powers are good may be sent to the bracing health resorts on the eastern coast. For more delicate children who bear cold badly, the south of France, the warmer seaside resorts of the

Riviera, and other shores of the Mediterranean; or in England, the warmer and more equable localities on the southwestern coast, such as Bournemouth, Torquay, and Penzance may be recommended for the winter.[1]]

In addition to these therapeutic measures, hygienic precautions must be observed during the intervals. These include hardening procedures, such as cool ablutions, air baths, and cool or cold foot-baths given early in the morning. (See HARDENING.)

Adhæsio Linguæ. See TONGUE-TIE.

Adhesion of Prepuce, Epithelial. See PREPUCE, EPITHELIAL ADHESION OF.

Agrypnia. See INSOMNIA.

Albumin Water.—This mixture which was proposed by Demme, is chiefly employed in cases of acute gastrointestinal catarrh of infants when it is desired to relieve the diseased intestinal tract from any functional activity for some time (starvation diet). The mixture is prepared as follows: The white of an egg is stirred up with ½ liter of cold water, previously boiled or sterilized, and strained through a fine cloth which has previously been boiled, after which it is mixed with a little milk or cane-sugar and administered in teaspoonful doses. [In cases of milk-infection milk should never be added to albumin water used as a substitute in the "no-milk" diet.—ED.].

Albuminuria, Cyclic (*Pavy's Disease*).—This condition is characterized by the daily periodic occurrence of variable quantities of albumin in the urine, with an entire absence of any morphologic elements, and by the disappearance of the urinary changes during or after protracted bodily rest. The cause is sometimes found in an antecedent infectious disease; but there also appears to be during puberty a certain causal

[1] From *System of Physiologic Therapeutics*, Cohen, vol. iv.

relation with neurasthenia and hysteria, owing to circulatory disturbances, especially in the female.

Although the *prognosis* of the disease is favorable, its long duration, during which bodily exercise must be restricted, not infrequently interferes with the child's development in a variety of ways and leads to psychic depression.

The most important factor in the *treatment* consists in the enforcement of as absolute a degree of rest as is attainable. Depending on the severity of the disease, the child should be allowed only very brief exercise; or general massage may even be substituted for exercise. The same limitation of diet as in other diseases of the kidneys is not indicated; but irritating and diuretic foods as well as spirituous liquors should be avoided.

The internal medication in anemic states consists in the exhibition of iron or arsenic preparations. In addition to the medicinal treatment the child should be given brine or carbonated-iron baths, and should spend as much time as possible in the open air in some healthy locality.

Amnion-Navel. See UMBILICUS, DISEASES OF.

Analysis of Milk. See MILK, EXAMINATION OF.

Anemia.—Rarely congenital, this condition is in most cases secondary to some disease such as lues, rachitis, severe hemorrhage, acute or chronic diseases of the digestive tract, intestinal parasites, and diseases of the kidneys; or to improper or insufficient feeding, or, more rarely, overfeeding; or to various errors in hygiene which depend partly on want and poverty, and partly on lack of exercise and mental fatigue (school anemia). Depending on the degree of anemia, the child often exhibits a waxy pallor of the skin and the visible mucous membranes, edema of the lower lids, and coldness of the peripheral portions of the body, with excessive sweating. The effect of the disease on the entire organism is shown in loss of appetite, digestive disturbances, a tendency to catarrhal disease of the respiratory organs, and general

debility with imperfect resistance. The latter manifests itself in a great variety of disturbances characterized by increased irritability, with a tendency to change color suddenly (flushing), restless sleep interrupted by abrupt crying-out and hallucinations, bilateral or unilateral headache, syncopal attacks, frequent nose-bleed, hyperesthesias, and neuralgias.

The cardiac dulness is not infrequently enlarged. As a rule the heart action is accelerated, and during moments of excitement this may go on to tachycardia. The apex beat and the pulse are weak, and the latter is easily compressible. Accidental murmurs are sometimes heard over the heart, and a venous hum may be present over the cervical veins. The urine is usually abundant in quantity, pale in color, and of low specific gravity.

The hemometric examination of the blood with Fleischl's or Gowers' apparatus shows a marked diminution of the hemoglobin; microscopic histologic examination of the fresh preparation shows pallor and a difference in the shape and formation of the erythrocytes, while the leukocytes are only very slightly, or not at all, increased.

The *prognosis* in anemia depends on the cause. For purposes of differential diagnosis the urine and blood must always be examined.

The *treatment* also depends upon the etiology; the child's nutrition, the conditions and mode of life must be looked into and, if necessary, the child must be taken out of school altogether, or, at least, its hours of work restricted. Medicinally, iron preparations are prescribed, the choice depending on the degree of tolerance of the digestive organs. (See also the chapter on SCROFULOSIS.) In addition to the iron preparations mentioned in connection with scrofulosis, hemoglobin preparations, such as hematogen siccum, hematicum (Glausch), Hommel's hematogen, perdynamin, eubiose, ferratose, and iron-somatose may be used. Quite recently fersan and alboferrin, in the form of a powder or chocolate drops, or mixed with cocoa, have been added to the list. [The American preparation, ovoferrin, may also be mentioned as a valuable addition to those already mentioned.—ED.] With all

these preparations the initial dose must always be very small, and increased very gradually. Constipation and dietetic errors (the eating of acid foods) are to be guarded against.

Anemia, Cerebral (*Hydrocephaloid*).—Cerebral anemia in childhood is rarely caused by profuse hemorrhage; in infants, particularly, the cause, as a rule, is found in the exhausting loss of fluid from the tissues incident to severe intestinal disease. Occasionally cerebral anemia occurs in disease of the heart or from local causes, such as the pressure of a glandular tumor upon the blood-vessels of the brain. There is marked pallor of the brain substance, which, like the meninges, is soft and edematous, just as the peripheral portions of the body—feet, hands, and face—are also the seat of edematous swelling. At the same time the signs of arterial anemia and venous stasis are found in the brain.

The *symptoms* of cerebral anemia vary according as the condition is acquired or chronic. Acute cerebral anemia due to weakness of the heart manifests itself in the case of older children by attacks of more or less profound syncope, preceded by vertigo, and attended by pallor of the face, weakness of the pulse, rigidity of the pupils, and sometimes even epileptiform convulsions.

In some cases, especially in infants, the symptom-complex of acute anemia in many respects resembles that of acute hydrocephalus, for which reason Marshall Hall has used the term hydrocephaloid to describe acute cerebral anemia. After an attack of profuse diarrhea, visible changes in the skull make their appearance; the fontanel becomes more and more depressed, and the bones of the skull override; the patient is pale and comatose; the head is often retracted convulsively, and by its movements indicates the baby's restlessness, which is also shown by burrowing and rubbing the face in the pillow. The extremities are in a condition of tonic rigidity, and toward the end general convulsions may be superadded.

In conformity with the primary disease the pulse is weak and always very much accelerated, but regular; the respirations are rapid and irregular; the temperature is usually

subnormal. For the remainder the child presents the same desperate picture that is described in connection with acute gastro-intestinal catarrh. (See GASTRO-INTESTINAL DISEASES OF INFANTS.)

The *prognosis*, which is always doubtful, is referred to in connection with intestinal diseases. It is rendered still more grave by the occurrence of cerebral anemia, although in some cases appropriate treatment is followed by recovery.

Treatment consists in the main in the employment of stimulating remedies—not only mustard baths, hot rubs, hot packs, and the use of thermophores or hot bottles, but also, internally, the exhibition of stimulants, such as liquor ammon. anisat., æther aceticus, spirit. æther., 2 to 3 drops of each of these every quarter to half hour; injections of alcohol or camphor; and hypodermoclysis, in order to strengthen the heart. As will be mentioned in speaking of the treatment of acute intestinal catarrh, the most important factors in the treatment are a sufficiency of fluid and suitable nourishment.

Chronic cerebral anemia, which occasionally occurs in older children and manifests itself by mental weakness and fatigue with periods marked by irritative symptoms, such as headache, vertigo, neuralgia, and a tendency to partial or general convulsions, must be corrected by treating the causal conditions and at the same time restricting the child's physical and mental activities. Internally, weakness must be combated as much as possible by giving a nutritious albuminous diet with small quantities of alcohol; by prescribing iron preparations of various kinds; and by selecting a climate where the air is pure and the altitude not too great.

When attacks of acute anemia recur at frequent intervals every kind of psychic excitement, as well as violent exercise and cold baths, must be avoided. The attack itself is combated by loosening the clothing, lowering the head, instituting artificial respiration, and rubbing the body; sometimes bandaging of the legs may be necessary. Internally, stimulants and alcohol are to be administered as soon as consciousness has returned. The causal conditions include loss of

blood, hysteria, and nervousness, all of which require appropriate treatment.

Anæmia Infantum Pseudoleucæmica.—This form has been described as an independent variety of blood disease, and in its clinical symptoms in many respects resembles pernicious anemia and leukemia. The extreme pallor, with its usual concomitants, and the excessive enlargement of the spleen, on the one hand, and the absence of glandular swelling, on the other, furnish the necessary data to make a positive diagnosis. Examination of the blood shows a diminution of the red blood-cells and their hemoglobin, nucleated forms (megaloblasts and normoblasts), frequently a marked increase in leukocytes, and the appearance of myelocytes. In the severer cases the proportion of white cells to red may be increased to 1 : 100; 1 : 80, or 1 : 15 (Monti).

In this, as in other blood diseases, the development is slow. The disease sometimes occurs in very young infants during the first months of life; it may rest on the foundation of hereditary lues or inherited tuberculosis, and is particularly common in rachitis and intermittent fever.

The clinical picture is dominated by the progressive anemia with consecutive edema, and hemorrhages into the skin and mucous membranes, and the resulting cachexia.

The *prognosis* is not absolutely unfavorable, and a permanent cure may sometimes be achieved by careful dieting, improving the hygienic conditions, and the employment of iron and arsenic preparations. In those cases in which the disease depends on hereditary lues, rachitis, or intermittent fever, the appropriate line of *treatment* for these diseases must, of course, be adopted.

Anemia of the Brain. See ANEMIA, CEREBRAL.

Anemia, Pernicious Progressive.—This disease, which is rare in childhood, is due to profound disturbances of the blood-making organs and diminution of the hemoglobin, giving the blood a pale, meat-juice appearance, which can

be appreciated by the naked eye. Microscopically, a variety of morphologic changes (poikilocytosis) are seen, and the red corpuscles are diminished in number, while nucleated red corpuscles, in the form of normoblasts, megaloblasts, and gigantoblasts, are also found. Another important diagnostic point is that the diminution in the number of red blood-corpuscles is usually accompanied by a corresponding diminution in the number of leukocytes.

The *etiology* is but imperfectly known: in some cases intestinal parasites (Anchylostoma duodenale, Trichocephalus dispar, and Bothriocephalus latus); in others, hereditary lues or some other severe antecedent disease have been regarded as primary causes.

Symptoms.—As in all blood diseases, the course of pernicious anemia is usually slow, and the various clinical symptoms described under the heading of "ANEMIA" (*vide*) make their appearance very gradually. Later the skin and mucous membranes become edematous and pallid, and hemorrhagic areas appear; dilatation of the heart develops with systolic murmurs at the orifices and a low venous hum over the jugular veins. Occasionally enlargement of the liver and spleen can be demonstrated. The nutrition soon suffers, owing to the digestive disturbances; syncopal attacks and periods of apathy occur, and death ensues, after a long and protracted course, with all the appearances of profound cachexia, being usually brought on by some intercurrent disease.

The *treatment* demands absolute rest; and, owing to the want of natural heat-production, the patient must be wrapped in blankets or surrounded by thermophores and hot-water bottles. Internally, iron, as in simple anemia, and particularly arsenic preparations.

The *diet* must be regulated according to the patient's age and appetite; it must be as nutritious as possible, and the food must be given at short intervals and in small quantities.

Angina, Catarrhal.—In simple primary catarrhal inflammation of the pharynx the mucous membrane appears swollen

and reddened, particularly that of the tonsils. When the inflammation spreads to the fauces and to the soft palate, these parts become edematous, and the uvula is enlarged. Primary angina is caused by infectious germs and is favored by exposure to cold. (Secondary angina is a concomitant of most infectious diseases, and will be discussed in connection with those subjects.)

The disease begins suddenly, often with high fever, the subjective symptoms consisting in dysphagia or odynophagia, dryness of the throat and, when the uvula is enlarged, an irritative cough, especially in the recumbent position. Owing partly to the pressure of the enlarged tonsils on the Eustachian tube and partly to the spread of the inflammation to the middle ear, earache is also experienced. The submaxillary glands are usually swollen and painful on pressure.

The *treatment* is chiefly symptomatic, and should be directed primarily against the febrile symptoms. Cold compresses, frequently changed, should be applied to the throat and allowed to remain in place for a variable time, depending on the subjective symptoms.

Internally, in the case of older children, ice pills or frozen fruit may be administered by the spoonful. In order to disinfect the oral cavity the child should chew Bergmann's pastillæ anginales several times a day; or the time-honored practice of gargling with a mild disinfectant or astringent solution may be adopted. Bergmann's pastillæ anginales contain thymol 0.02 gm. ($\frac{1}{3}$ gr.), sodium benzoate 0.002 gm. ($\frac{1}{30}$ gr.), and saccharin. From 3 to 5 of these are to be chewed daily for about fifteen minutes, and the pulp expectorated. The disinfecting solutions generally used are a 1 per cent. watery solution of potassium chlorate or alum, diluted lime water, and hydrogen dioxid, 4 : 200. Sometimes lukewarm gargles, as, for example, sage tea or tea made from mallow leaves, to which a little milk may be added, if desired, are better borne. When swallowing is very painful, a few drops of tincture of opium, or cocain in the form of tea made trom coca leaves, may be used in the case of children who are used to gargling. As long as the fever lasts the *diet* must be bland, the

bowels must be kept open, and absolute rest in bed must be enforced.

Angina, Chronic Lacunar.—This term refers to the presence of whitish-yellow, caseous plugs, often quite hard from the admixture of calcium (tonsillar calculi), in the lacunæ of enlarged tonsils (Fig. 2). The disease is considered to be the result of repeated attacks of inflammation in the tonsils.

The chief *symptoms* are those of the presence of a foreign body, which, under certain circumstances, may produce reflex choking, vomiting, and cough. A common symptom which both the patient and his friends complain of is the fetid cheesy odor of the breath.

The *treatment* is practically mechanical and consists in expressing the plugs from the follicles with the handle of a

FIG. 2.—Chronic lacunar angina.

FIG. 3.—Posterior view of the extirpated tonsil from the case illustrated in Fig. 2: Bristles have been introduced into the lacunæ.

spoon, scraping them out with a curet, or removing them with a cotton-wound wooden applicator.

In order to prevent the renewed formation of tonsillar plugs the deep clefts in the tonsils should be treated for some time with a daily application of a 5 to 10 per cent. solution of silver nitrate or a 6 per cent. solution of iodovasogen; or they may be touched with the solid stick, which must be introduced to a considerable depth. To prevent food-remains from accumulating, the mouth should be rinsed after each meal with a solution containing lemon-juice.

As the plugs of inspissated secretion are not always susceptible of the treatment outlined above when the lacunæ are deep, it is sometimes necessary to divide the bridges of tissue which unite the lacunæ.

Angina, Chronic Leptothrix.—The description here given of this disease, which so far has been comparatively seldom observed, is largely taken from the clinical reports of Epstein, who has given a detailed description of it. Clinically, the essential point is the presence on the mucous membrane of the pharynx—particularly on the tonsils—of white, slightly elevated patches, closely adherent to their base, which, when examined microscopically, are found to consist of epithelial cells and great masses of fungi chiefly belonging to the leptothrix varieties. The exudates at first range in size from that of the head of a pin to that of a lentil, and the color is a dull white or like that of ground glass; later the masses of exudate become more prominent and project above the surface, coalesce, and form disks or linear figures. Small tassel-shaped or fringe-like excrescences of a whitish color and friable consistence make their appearance later, probably after the epithelial layer has been broken through. [This affection, according to Geo. B. Wood, is more correctly described as a keratosis of the tonsil, the presence of leptothrix and other organisms being considered of secondary importance and without etiologic significance.—Ed.]

The subjective symptoms consist in a scratchy feeling with soreness and burning, pain on swallowing, obstinate hawking and coughing, with very slight febrile movements.

Treatment.—The affection is often obstinate and is little influenced by therapeutic measures. The application of alcohol, chloroform water, or tincture of iodin, or gargling with Haller Iodwasser may be tried. [In the editor's hands, avulsion of the masses with forceps, followed by cauterization with the electric cautery, has given very satisfactory results.—Ed.]

Angina, Diphtheroid (*Vincent's Angina*).—Of this rare disease (which Vincent has accurately described) but little is

known. The presence of a membrane gives a superficial resemblance to diphtheria; but all the remaining symptoms, as well as the clinical course, are quite different. Vincent distinguishes two forms of this angina: Both begin with the formation of a coherent membrane, which adheres tenaciously to the tonsils, and in rare cases to the palate. The submaxillary lymph glands are usually swollen, the patient complains of difficulty in swallowing, and there is moderate fever. In the first, or diphtheroid, variety the membrane softens and gradually comes away without leaving any deeper lesion; in the second, or ulcerative-membranous, form the necrosis and degeneration of the mucous membrane lead to the formation of an ulcer which is very slow to heal.

In both forms a bacillus has been found, which Vincent called Bacillus fusiformis, on account of its shape—it being slightly swollen in the middle and pointed at the two extremities. It stains faintly with fuchsin and methylene-blue, somewhat more deeply with dilute carbol-fuchsin, and is not stained by the Gram-Weigert method, thus differing from the diphtheria bacillus. Attempts to cultivate the bacillus have unfortunately proved unsuccessful. Therapeutically, an application of a 1 to 3 per cent. solution of silver nitrate is recommended.

Angina, Lacunar or Follicular.—Pathologically, this disease presents the same appearance as the preceding, except that the inflammation and swelling of the tonsils are much more intense, while the surface and the crypts of the glands present small, white, often confluent patches simulating a diphtheritic membrane, but differing from the latter by the fact that they are easily removed. It is undoubtedly an infectious disease. The pus always contains, in addition to leukocytes, staphylococci, streptococci, and pneumococci.

The *clinical features* of this disease differ from those of catarrhal angina only in so far as the *constitutional symptoms* are more intense, particularly the fever, which in young children during the beginning of the disease may be associated

with convulsions. The *local symptoms* also, especially pain during deglutition, are very marked.

Recovery takes place slowly with a gradual subsidence of the anginal symptoms; the enlarged tonsils shrink, and the plugs are discharged from the follicles. In rare cases the infection is conveyed along the lymph channels not only to the neighboring lymph glands—which regularly enlarge—but also to other portions of the body, causing middle-ear inflammation, articular rheumatism, pericarditis, endocarditis with secondary chorea, pleuritis, nephritis, perityphlitis, or osteomyelitis. It is, therefore, important in making a prognosis to remember the possibility of such complications and to make a careful examination of the organs endangered, including an analysis of the urine to determine the presence or absence of albumin.

In those cases in which the appearance of the exudate suggests a suspicion of diphtheria, a smear preparation [corroborated by a culture.—ED.] of the exudate should be examined for the presence of Löffler's bacilli.

Treatment.—Owing to the danger of contagion, as a prophylactic measure, the patient should be isolated. In order to remove the masses of exudate, which are frequently membranous in character the surface of the tonsils should be thoroughly cleansed several times a day with a long wooden applicator, tipped with cotton and saturated either with a 1 : 1000 solution of bichlorid of mercury, a 1 per cent. solution of chinosol, a ¼ per cent. solution of aluminum acetate, or a 20 per cent. solution of hydrogen dioxid. The cotton pledgets should be burned after use.

To combat the local symptoms cold water or ice-compresses are employed, or ice-pills and frozen fruit may be given by the mouth. To hasten the separation of the exudate, and still more for the purpose of deodorizing and disinfecting the oral cavity, lukewarm disinfectant gargles are prescribed.

Medicated chewing gum and similar preparations are also to be recommended, both on account of the cleansing effect of the saliva—which is secreted in greater abundance during mastication—and for the direct action of the antiseptics upon

the diseased surface. Of such remedies should be mentioned Bergmann's tablets, which contain, among other ingredients, thymol, benzoic acid, and saccharin. (See ANGINA, CATARRHAL).

The fever is controlled by means of cold compresses to the head, cool ablutions given every quarter, half, or one hour, or ice-packs; and, if necessary, especially in the evening, a dose of quinin, antipyrin, salipyrin or lactophenin, 0.10–0.20 to 0.40 gm. (1½–3 to 6 gr.), may be administered. The patient, during the beginning of the disease, should receive only cool liquid nourishment; must remain in bed until the fever has entirely disappeared; and, owing to the possibility of secondary infection, must be carefully watched during convalescence. Tonsils that are naturally enlarged or have become so as the result of frequent attacks of lacunar angina should be removed.

Angina, Phlegmonous (*Tonsillar Abscess*). See ABSCESS, PERITONSILLAR.

Angioma (*Telangiectasis*).—This term is used to describe congenital, circumscribed capillary tumors, or large flat ramifications of blood-vessels in the skin. They have their seat either in the cutis or in the subcutaneous cellular tissue, and accordingly present reddish or bluish patches, or elevated raspberry-like eminences, or soft, doughy circumscribed tumors, the overlying skin being either normal or traversed by dilated and ramifying blood-vessels.

Angiomata, as well as telangiectatic tumors, may be single, but are more frequently multiple and scattered over the entire body. They are often permanently disfiguring. Small, superficial vascular nevi can be quickly and radically removed with the Paquelin cautery; vaccination over a telangiectatic patch is often without result (on account of the hemorrhage), but should always be tried; the same disadvantage attaches to the application of ichthyol-collodion (1 : 9). In addition to these procedures, electrolysis, the galvanocautery, or extirpation of the vascular tumors is recommended.

Animal Parasites. See INTESTINAL PARASITES.

Ankyloglosson. See TONGUE-TIE.

Anus, Atresia of. See ATRESIA OF ANUS AND RECTUM.

Anus, Fissures of. See FISSURA ANI.

Anus, Prolapse of. See PROLAPSE OF ANUS AND RECTUM.

Aphthæ, Bednar's.—In speaking of miliary nodules on the palate (see p. 313) it is stated that the forcible and injudicious use of coarse linen in cleansing the mouth of newborn infants, or the use of coarse, granulated sugar (a practice that is still in vogue) may cause traumatic ulcers on the hard palate. These ulcers have their seat to one side of the raphe, especially at the point where the pterygoid process is inserted into the hard palate, as the mucous membrane at that point is attenuated; they develop from small round patches which are at first hyperemic. If the traumatism is continued, the lesion develops into extensive and often confluent ulcers with stippled floors, interfering greatly with nursing (see Fig. 4).

FIG. 4.—Bednar's aphthæ.

Treatment.—The oral cavity should be carefully cleansed with a camel's-hair brush dipped in some disinfecting fluid, such as the following solutions: 2 per cent. of boric acid, or 2 to 5 per cent. of sodium biborate; and the ulcerated surfaces touched once or twice a day with 2 per cent. of silver nitrate or protargol.

Aphthous Stomatitis. See STOMATITIS, APHTHOUS.

Apoplexia Neonatorum. See HEMORRHAGE, MENINGEAL.

Apoplexy of the Newborn. See HEMORRHAGE, MENINGEAL.

Appendicitis (*Typhlitis*, *Perityphlitis*).—Clinically, the term appendicitis is a synonym not only for inflammation of the cecum (typhlitis), but also of the vermiform appendix (appendicitis) and the cellular tissue surrounding the two structures (perityphlitis). This disease, which has become very much more frequent in recent years, is due to a variety of causes. In many cases it attacks children with chronic constipation, and it is not illogical to assume that the local inflammation is caused by the accumulation of fecal remains in the cecum, and especially the protrusion of a particle of such remains—a so-called fecal concretion—into the vermiform appendix. In addition to these traumatic factors, it is possible that the toxic products which develop in the fecal remains and the invading bacteria may irritate the bowel and its surroundings, producing inflammation. In many cases external violence to the abdomen, impacted solid foreign bodies that have been swallowed, or an accumulation of intestinal parasites (ascarides) have been incriminated as causes of the disease.

The disease may begin suddenly or may be preceded for a few days by slight disturbances of digestion with constipation. The most important clinical symptoms are pain in the abdomen, especially in the ileocecal region, nausea with or without vomiting, and fever. The pain increases in severity and extends from the point of origin, which is at first circumscribed, to the fundus of the bladder and to the ascending colon, until finally the entire abdomen becomes exceedingly sensitive even to the slightest touch.

On careful palpation, especially in those cases in which a stoppage of the bowel has preceded the disease, a cylindric tumor of varying size is felt in the ileocecal region. Under

certain conditions there may be only sensitiveness to pressure in the ileocecal region without any palpable tumor.

After a variable time the pain, which at first was localized, spreads to the surrounding area, the concomitant symptoms increase greatly in severity, and a tumor develops in the ileocecal region. Owing either to the radiation of the pain or to the extension of the inflammation, evacuation of the bladder is attended by pain, or anuria may develop, while movements of the right leg also cause pain. As a result the patient lies very still, with the lower extremities flexed on the abdomen, and only throws himself from side to side, without change of attitude during the colicky attacks, which occur at intervals.

At first the stools are mucous and of a light fecal color, intense tenesmus attending the evacuations; but gradually the intestine becomes occluded from the accumulation of feces or from the developing exudate, and finally neither feces nor flatus is evacuated, owing to the developing of paralysis of the muscular layer of the intestine.

The increasing severity of the local symptoms is accompanied by a corresponding change in the concomitant phenomena: The vomiting increases, the vomited matter containing bile and sometimes having a slightly stercoraceous or distinctly fecal odor; the temperature rises; the pulse becomes exceedingly rapid; the patient assumes a look of severe illness and suffering; the abdomen is distended; the tongue dry; the odor of the breath is often of a sour and stercoraceous character; thirst is enormously increased; urination, as mentioned above, often ceases entirely; and the skin over the ileocecal region is tense and often edematous. As soon as perforation of the exudate takes place and general inflammation of the peritoneum develops, the gravest symptoms of that disease (see PERITONITIS, ACUTE) manifest themselves, and death may ensue, with the picture of the most profound collapse. From this description it will be seen that the course and termination of appendicitis are subject to great variations. In some cases—and they are not so very rare—recovery may take place either spontaneously or be brought about by arti-

ficial means; but it is practically impossible after general, secondary septic peritonitis has developed.

Spontaneous recovery may be brought about by resolution of the fecal impaction, absorption of the exudate, rupture into the bladder, vagina, or rectum, or by the formation of a localized abscess.

Curschmann asserts that the appearance of leukocytosis is an indication that abscess-formation has taken place. Under certain circumstances the temperature drops, the pulse becomes slow, the skin is covered with sweat, and the symptoms, which may have been most alarming, subside completely; or a circumscribed resistant tumor remains in the ileocecal region, and, after persisting for several weeks, undergoes absorption; or intermittent fever develops with very slight improvement in the general condition, and confirms a suspicion that a localized abscess has formed. In order to determine how far the abscess extends into the depths of the abdomen a digital examination per rectum should be made.

The *treatment* of appendicitis may be divided into three parts: the therapeutic measures employed in the beginning, during the course, and after the subsidence of the acute disease.

In the beginning of the disease, especially in those cases in which the symptoms of fecal accumulation and the accompanying pain are most prominent, and there are but few signs of inflammation of the cecum, an attempt should be made to open the bowels with purgatives. The following remedies are recommended: Castor oil, 1 to 2 teaspoonfuls; hydromel infantum, 20 to 30 gm. (5 dr. to 1 oz.); fractional doses of calomel every hour, from 0.05–0.10 to 0.20 gm. (¾–1½ to 3 gr.), depending on the child's age, and with or without powdered jalap in daily doses of 0.1 to 0.3 gm. (1½–5 gr.), or any other laxative, followed in a few hours by a cool irrigation consisting of ½ to 1 L. (quart), containing a tablespoonful of glycerin or 2 to 5 tablespoonfuls of aqua laxativa, or 3 to 6 tablespoonfuls of ordinary syrup.

If, in the beginning it turns out that there was no impac-

tion of feces, but merely irritation of the cecum, followed by exudate, and if after one thorough evacuation of the bowels the inflammatory symptoms increase, no further attempts should be made to empty them. Under such circumstances the most important requisite is complete rest for the bowel, which is achieved by giving opium either by the mouth or, if it is vomited, in the form of a suppository.

Laudanum may be given in doses of 1 to 2 drops for every year, or extractum laudani 0.05 to 0.10 c.c. (¾–1½ min.) to 50 c.c. (1½ fl. oz.) of water, a teaspoonful every one or two hours; or, if necessary, morphin in the dose of 0.0025 to 0.005 gm. ($\frac{1}{24}$–$\frac{1}{12}$ gr.). All other opium derivatives are unreliable.

[Apart from the question of the use of opium in appendicitis, all the doses of opium here recommended would be considered unnecessarily large by most American physicians. In the opinion of surgeons of widest experience in the treatment of this disease opium is distinctly contraindicated, because by arresting pain it prevents a true appreciation of the local conditions and may mask the spontaneous cessation of pain which attends gangrene of the appendix and is the cardinal symptom for immediate operation; because it arrests secretion; and because by its effect on the nervous system it lowers resistance to infection.—Ed.]

For suppositories, opium should be prescribed with extract of belladonna, 0.005 to 0.0025 gm. ($\frac{1}{12}$–$\frac{1}{24}$ gr.) of the former with 0.005 to 0.02 gm. ($\frac{1}{12}$–$\frac{1}{3}$ gr.) of the latter for each suppository. If there is severe tenesmus, irrigation with a small quantity of starch water or linseed decoction with the addition of tincture of opium, 2 drops for each year, may be employed.

The patient must, of course, remain quietly in bed, and should be disturbed as little as possible. To ease the tension of the abdominal muscles a pillow is placed under the knees.

The child should not be allowed to turn over or sit up, and must be placed upon the bedpan, both for urination and for evacuation of the bowels. Strict rest in bed must be enforced for at least a week after the last attack of pain or after the last febrile elevation.

Locally, cold should be applied to the right half, or even to the entire abdomen, by means of cold compresses, one or two ice-bags (which must not be too heavy), or Leiter's coils; or compresses wrung out of 96 per cent. alcohol, and covered first with gutta percha paper (protective), then with a wet cloth, may be used.

Sometimes cold is not well borne, in which case Priessnitz compresses should be used.

The question of operation in many cases is a vital one and may decide between life and death. To answer this question the advice of an experienced surgeon should be sought, to whom the decision should be left. If such advice is not obtainable and the practitioner is thrown on his own resources, it is better to resort to operation early, if the course of the disease has been carefully watched, than to wait until the prospect of cure has become doubtful.

Even after spontaneous perforation through the bladder or rectum has taken place, operation may still be required because the evacuation of the abscess has not been complete. The same is true of the relapsing forms of perityphlitis. In these cases the vermiform appendix should be removed during an interval between attacks.

So long as the excessive pain, fever, and vomiting continue, every form of nourishment, whether solid or fluid, is harmful in severe cases. So long as there is any symptom of inflammation—sensitiveness to pressure or elevation of temperature—the diet must be liquid and administered in small quantities. It should consist of milk or broths, possibly with the addition of the yolk of an egg, somatose, nutrose, or sanatogen. Later, say a week after the subsidence of the fever, dishes prepared with milk, purée of soups with stock, soft-boiled eggs, thick soups, steamed brains, purée of meat, or light custards may be permitted.

To guard against relapses as much as possible, it is important to see that the bowels are evacuated every day, and that all heavy and inflating foods are eliminated from the diet, as well as many kinds of fruit, such as pears, grapes, currants, etc. If there is any suspicion of ascarides (see p. 256) the stools

should be carefully examined and, if necessary, small doses of santonin should be given. After the perityphlitis has subsided, measures to hasten absorption of any exudate that may have remained must be employed. For this purpose iodin preparations, such as iodin-vasogen and iodoform collodion, are used locally; also, sitzbaths, mud and fango compresses; the "soft-soap cure"; and, most important of all, light massage cautiously applied and discontinued at the slightest appearance of irritation may be resorted to. Even when the presence of exudate cannot be demonstrated, regular daily evacuation of the bowels must be strictly attended to for months afterward, and all forms of violent bodily exercise must be forbidden.

Arteritis Umbilicalis. See UMBILICUS, DISEASES OF.

Arthrogryphosis. See TETANY.

Articular Rheumatism. See RHEUMATISM, ARTICULAR, ACUTE, AND CHRONIC.

Artificial Feeding of Infants. See FEEDING, ARTIFICIAL.

Artificial Respiration. See SCHULTZE'S METHOD.

Ascaris Lumbricoides. See INTESTINAL PARASITES.

Ascites.—The accumulation in the peritoneal cavity of an alkaline, slightly albuminous fluid transudate. This *symptom* may be due to a variety of causes: We find ascites associated with general dropsy in cardiac and renal diseases, as the first sign of insufficiency in diseases of the liver or portal vein, in compression of the inferior vena cava, and in chronic peritonitis.

The outer and visible signs consist in a gradually increasing spheric distention of the abdomen, thinning of the skin,

with distinct prominence of the veins, and obliteration of the umbilical folds.

When one side of the abdomen is tapped with the finger the transmission of the blow is felt on the opposite side in the form of a wave (fluctuation). As the fluid occupies the lowest portions of the cavity when the patient lies in the dorsal position, dulness, varying with position, is elicited on percussion over the lateral and lower portions of the abdomen.

Owing to the enlargement of the abdomen both the abdominal organs and the diaphragm are displaced, causing marked respiratory disturbances. The pressure on the intestines also produces derangements of the stomach, bowel, and bladder. The increase in size and weight of the abdomen interferes with freedom of movements and causes a peculiar gait and attitude, the upper part of the body being inclined backward, as in severe degrees of lordosis.

As soon as the accumulation of fluid has reached such dimensions as to produce distinct disturbances in the circulatory and respiratory systems, puncture of the abdomen and gradual evacuation of the ascitic fluid are indicated: The abdomen having been well cleansed with alcohol and ether, a puncture is made with an ordinary trocar (thoroughly disinfected) either at some point in the line joining the ensiform cartilage and the anterior superior spine, or in the line running from the umbilicus to the symphysis. As soon as the ascitic fluid reaccumulates (in spite of appropriate treatment) and alarming symptoms develop, puncture is to be repeated. For the removal of the transudate by diuresis, diaphoresis, and the administration of purgatives, see under treatment of the respective causal organic diseases.

Asphyxia Neonatorum.—This term is used to indicate a more or less complete apnea in the newborn infant, caused by interference with placental respiration; it varies in degree and the cause is found in abnormal and tonic contractions of the uterus, premature separation of the placenta in breech presentations, or compression of the umbilical cord in cases

of prolapse or when the cord is wound around some part of the infant's body.

Asphyxia developing after birth is due to diminished vitality, atelectasis of the lungs, deformity of the lungs or heart, or cerebral, and especially intermeningeal, hemorrhage.

Depending upon the intensity of the condition, we distinguish a mild grade (*asphyxia apoplectica*) and a severe grade (*asphyxia pallida*). In the former the child is deeply cyanotic, the face is puffy, the eyes bulge, the heart sounds are barely audible, the pulse-rate is retarded, and the respirations are infrequent, superficial, and accompanied by mucous râles.

Children with *asphyxia pallida* present a death-like appearance and pallid waxy color; the skin and mucous membranes do not react; the cardiac impulse is weak and accelerated, and respiratory movements are absent.

In many cases, treatment, if instituted at once, is followed by favorable results, and the *prognosis* therefore depends on the prompt appearance of more-and-more distinct signs of improvement.

The object of *treatment* is to free the air passages by removing the mucus, to improve the defective respiration by increasing the supply of oxygen, and to stimulate the force of the heart and circulation. The mucus may be removed with the finger covered with a small piece of absorbent gauze, or by suction through a catheter introduced into the air passages. These procedures must be repeated whenever fresh masses of mucus accumulate. Oxygen is supplied by inducing artificial respiration after the Sylvester method; insufflating air through a catheter, or by stimulating the respiratory center by means of very warm baths, alternating with cold douches or affusions to the back or chest, and by slapping the skin and rubbing it with warm cloths after the bath. The so-called Schultze method of artificial respiration (which see) is very effective and acts as a marked incentive to the circulation, besides supplying air to the lungs. The hydrotherapeutic measures referred to are also excellent excitants to the circulation, and may be further reinforced by the internal administration of

stimulants, such as 1 drop of cognac in a teaspoonful of tea, black coffee, or liquor ammonii anisat. (aromatic spirit of ammonium), or 2 drops of spirit of ether in a teaspoonful of tea or water, every one or two hours, or even hypodermic injections of camphor.

For the sake of completeness, it may also be mentioned that efforts to induce artificial respiration may be supplemented by applying a faradic current to the phrenic nerve or to the diaphragm; by the inhalation of oxygen; or by rhythmic traction on the tongue, as advised by Laborde, taking care not to injure the mucous membranes. These measures must be kept up until signs of evident and lasting improvement are demonstrable; if the pallor returns or the respirations diminish, all the above-mentioned therapeutic aids must be called into play afresh.

It should also be mentioned that children born with asphyxia must always be kept in a very warm room (which, however, must be frequently aired).

Asthma, Bronchial.—This disease is rarely observed in children—occurring as a complication of some disorder of the nasopharynx, of the bronchial tree, or of the lungs, more particularly emphysema. These latter are sometimes secondary, the asthmatic attacks being caused by some other peripheral nervous irritation (nervous asthma), by enlargement of the thymus gland (thymic asthma), or occasionally by digestive disturbances and climatic influences.

Attacks usually occur at night, either spontaneously or following catarrh of the respiratory organs, and manifest themselves by air-hunger, marked expiratory dyspnea, cyanosis, general increase of irritability, and, after the attack (which often lasts for hours) has subsided, by extreme fatigue, profuse sweating, and general relaxation. In the sputum, which is occasionally expectorated, Charcot-Leyden crystals and Curschmann spirals are found on microscopic examination. The frequently recurring asthmatic attacks may cause alterations in the thoracic cage and emphysematous changes in the lungs, with dilatation of the heart.

Although the nature of the disease is such that the *prognosis* is rarely unfavorable, the resulting sequelæ sometimes have a serious influence on the child's general health.

Aside from the *treatment* appropriate to the causal conditions discovered in an individual case, the symptomatic use of sedatives is indicated. Among these may be recommended chloral hydrate, internally, in the dose of 0.20 to 0.40 gm. (3–6 gr.), or in the form of an enema, 0.40–0.50 to 1 gm. (6–15 gr.) at a time; sodium bromid, 0.50 to 1 gm. (8–15 gr.); quinin bromate or valerianate, 0.25 to 0.50 gm. (4–7½ gr.). Internally, also, may be prescribed sodium iodid or iodalbacid, 1–2 gm. (15–30 gr.) to 100 c.c. (3 fl. oz.) of water; tincture of lobelia, 3–5 to 10 drops a day; extract of belladonna, 0.02–0.05 gm. (⅓–¾ gr.) to 100 c.c. (3 fl. oz.) of water, from a teaspoon- to a dessertspoonful three times a day; or arsenic, in the form of Fowler's solution, in ascending doses.

As in the case of adults, asthma powders, inhalations of pyridin (5 drops on a cloth hung around the neck—apply three or four times a day), or fluid extract of grindelia, 0.5 c.c. (8 min.), once or twice a day, in wine, may be used.

Sometimes the various asthma cigarettes and asthma powders, which contain substances treated with niter, such as the leaves of hyoscyamus, belladonna, stramonium, grindelia, or cannabis indica, are useful.

In all cases of asthma it is advisable to have the child spend as long a time as possible at some resort where the air is pure (preferably at the mountains), and to have the bedroom aired as often as possible. A protracted course of treatment in the pneumatic chamber is also very much to be commended. In addition to the above-mentioned therapeutic remedies various procedures to harden the body are indicated, to guard against a return of the attacks. (See HARDENING.)

Atelectasis.—Asphyxia frequently leads to general or local atelectasis of the lungs, especially when the child is congenitally of a low vitality.

Owing to the restricted intake of oxygen the subject presents the *picture* seen in mild degrees of asphyxia (see p. 43).

The respirations are superficial, accelerated, and interrupted; the voice is hoarse, and the little one emits only a short, plaintive whimpering cry. The peripheral portions of the body are cold and cyanotic.

An extensive atelectasis sometimes betrays itself by the physical signs of dulness, diminished respiratory murmur, and occasionally by the presence of crepitant râles.

The respiratory disturbances in atelectatic children also interfere with closure of the cardiac orifices, and thus tend to keep the fetal circulation open.

The *prognosis* of atelectasis depends on the infant's vitality, the extent of the disease, and the treatment employed. As in asphyxia, *treatment* consists in supplying plenty of fresh air and stimulating respiration; hence, all the external and internal remedies discussed in connection with asphyxia must be employed. In addition to these measures (which must be employed continuously or repeated at frequent intervals) the infant's nutrition must be carefully looked after, for which purpose the auxiliary methods discussed in the article on DEBILITAS VITÆ (p. 105) must be resorted to.

Athetosis.—Incessant spasmodic movements of individual muscles, especially of the upper and lower extremities and, more rarely, of the face, which, like choreic movements, are not present during sleep. The movements are always the same in kind and consist in extension or flexion of the fingers and, more rarely, of the toes. Athetosis is usually a symptom of some cerebral disease, and is observed chiefly in acute polioencephalitis. (See PARALYSIS, SPINAL.)

Athrepsia. See ATROPHY.

Atresia of the Anus and Rectum.—Complete obstruction of the rectum is due to congenital arrest of development consisting in the failure of the ends of the rectum, which at first are blind, and the embryonal external invagination of the skin to unite and establish a communication. The various degrees and kinds of this condition of arrested development

are shown in the accompanying figures (Figs. 5–10). The most frequent form and the one which is practically the most important as well as favorable for relief is that in which the rectal extremity extends as far as the skin, and there is no

FIG. 5.

FIG. 6.

FIG. 7.

FIG. 8.

FIG. 9.

FIG. 10.

FIGS. 5 to 10.—Various forms of congenital obstruction of the anus; 5, Atresia ani; 6, atresia recti; 7, atresia ani et recti; 8, atresia ani vesicalis; 9, atresia ani urethralis; 10, atresia ani vaginalis.

anal invagination. As a rule, the perineum bulges in this situation from accumulation of meconium (Figs. 5–10).

The *treatment* is always operative.

Atrophy, Progressive Muscular. See PARALYSIS, PSEUDOHYPERTROPHIC.

Atrophy (*Pedatrophy; Athrepsia; Marasmus*).—This condition differs from tabes mesenterica (see TABES), which usually terminates fatally through persistent disease of the intestine, by the fact that in atrophy intestinal catarrh, especially during the beginning of the disease, is not a prominent feature.

Atrophy develops in children who, owing to some organic defect, are unable to assimilate their food, although the latter is both adequate in quantity and suitable in quality. In these children the digestive ferments are less active than in normal individuals, and as a result there are, first, disturbances of the digestive function, and, second, intoxication of the organism.

The disease develops insidiously with the *symptoms* of chronic dyspepsia; vomiting and dyspeptic stools alternate with periods of apparent good health and good appetite. The child uses up the supply of subcutaneous fat, including the physiologic "sucking-pad" in the cheeks, and loses weight steadily; sleep is disturbed by crying; the heart-action be-

FIG. 11.—Atrophy in an infant of six months, with multiple abscesses: Arthrogryphotic posture of the hands and feet.

comes weaker; cyanosis, depression of the fontanel, subnormal temperature, and, in very young breast-fed infants, sclerema, rigidity, trismus, tetany, thrush, and furunculosis develop (see Fig. 11). The appetite is impaired; the stools become less frequent; the urine is scanty and usually contains albumin; some pulmonary disease, such as pneumonia or atelectasis, makes its appearance; and with the picture of complete exhaustion or of hydrocephaloid or sinus-thrombosis death ends the scene.

As in the case of tabes mesenterica, the only hope lies in suitable feeding. *Prophylactically*, there is a better prospect of success if, as soon as the child begins to lose flesh, the food

is changed, the hygienic conditions improved, and the child placed under constant medical supervision.

As the digestive function is greatly reduced or even abolished, the following drugs should be given internally in order to relieve the work of the digestive organs: Dilute hydrochloric acid, 10 to 20 drops to 3½ fl. oz. of water, one teaspoonful before each feeding; pepsin or lactopeptin, 0.05 to 0.1 gm. (¾–1½ gr.) three or four times a day; pegnin; pancreatin, a small penknife-point three or four times a day; or Karlsbad or Vichy water, two to three dessertspoonfuls two or three times a day. To these should be added some bitter tincture, as, for example, compound tincture of quinin; extract of condurango; extract of quinin (Nanning); bitter tincture, or tincture of absinthe, 5 drops in a teaspoonful of sweetened water three times a day; and, finally, a decoction of cinchona bark, 5 to 80 gm. (75 gr. to 2½ fl. oz.), with dilute hydrochloric acid, 10 to 20 drops (one dessertspoonful four times a day).

Balanitis.—When the foreskin is partially adherent to the glans penis, and still more frequently in cases of phimosis, inflammation of the mucous layer of the foreskin and of the glans may occur (as a result of stagnation of the urine in the preputial sac) with consequent infection of masses of smegma which have accumulated in the sulcus of the glans and have become inspissated, acting like foreign bodies. The entire foreskin becomes swollen, especially at the cutaneous orifice, and the inflamed, reddened, and often excoriated skin protrudes in a heavy fold. A purulent and sometimes serosanguineous secretion can be expressed from the preputial sac. In children predisposed to this disease the preputial sac should be daily cleansed (as a precautionary measure) and dusted with some dusting powder, such as dermatol, airol, 1 : 10 of boric acid, starch powder, tannic acid, talcum, or bolus alba.

The *symptoms* due to balanitis chiefly manifest themselves during micturition, which becomes difficult and painful. Older children have difficulty in walking, and hold the legs

wide apart. Occasionally painful swelling of the inguinal glands occurs.

The *treatment* consists in removing the exciting causes and irrigating the preputial sac—at first several times a day, with a small syringe tipped with a thin drainage tube. For this purpose a mild solution of potassium permanganate, a 2 per cent. solution of boric acid, or a ¼ per cent. solution of lysol or creolin may be used. Owing to the secondary inflammation and edema of the foreskin it is advisable to elevate the part and to apply compresses wrung out of a solution of lead acetate or aluminum acetate.

If the phimosis is not too great, the preputial sac can easily be wiped out with a flat wooden applicator wound with cotton. Whenever it is possible the foreskin should be drawn back, in order to separate the diseased portions of mucous membrane, and thoroughly covered with a dusting powder before the foreskin is allowed to slip forward.

Barlow's Disease. See SCURVY, INFANTILE.

Basedow's Disease. See GOITER, EXOPHTHALMIC.

Basilar Meningitis. See MENINGITIS, TUBERCULOUS.

Bednar's Aphthæ. See APHTHÆ, BEDNAR'S.

Bedwetting. See ENURESIS.

Birth-palsy. See PARALYSIS, PLEXUS.

Bladder, Catarrh of. See CYSTITIS.

Bleeder's Disease. See HEMOPHILIA.

Blennorrhea Neonatorum. See CONJUNCTIVITIS NEONATORUM.

Blennorrhea of the Navel. See UMBILICUS, DISEASES OF.

Blennorrhea of the Vulva. See VULVOVAGINITIS.

Blepharitis. See EYE, DISEASES OF.

Blood-tumor. See ANGIOMA.

Bloody Urine. See HEMOGLOBINURIA and NEPHRITIS, ACUTE.

Blue Sickness (*Blue Baby*). See HEART, DISEASES OF.

Boils. See FURUNCULOSIS.

Bones, Caries and Necrosis of. See CARIES AND NECROSIS OF BONES.

Brain Abscess. See ENCEPHALITIS, ACUTE.

Brain, Anemia of. See ANEMIA, CEREBRAL.

Brain, Hemorrhage of. See HEMORRHAGE, CEREBRAL.

Brain, Hernia of. See MENINGOCELE.

Brain, Hyperemia of.—Hyperemia of the brain of variable intensity occurs temporarily in all acute febrile diseases. In many of these cases the toxic effect of the disease itself or some other intoxication (alcohol) probably plays a certain part, albeit a temporary one, in the *etiology*.

Acute hyperemia is also the cause of the condition known as insolation, or sunstroke, and, finally, of the disease which is discussed under the name of meningismus (see MENINGITIS SEROSA). Chronic cerebral hyperemia occurs in all diseases that lead to passive congestion, including congenital or acquired heart lesions and the various pulmonary diseases.

The *symptomatology* of what is known clinically as cerebral hyperemia includes disturbances of the general health—often quite temporary in character—such as headache, vomit-

ing, anorexia, capriciousness or nervous irritation with alternate flushing and pallor of the skin, disturbed sleep, apathy, somnolence, frequent yawning, sometimes also fever and frequent or even irregular pulse.

These conditions are observed not infrequently in children during the school-going age when they are not suitably nourished, after the administration of alcoholic beverages, in constipation, and in the case of girls at the beginning of menstruation. After an injury to the head the clinical picture of cerebral hyperemia is also sometimes observed.

A hyperemic condition of the brain at the beginning or during the course of a febrile disease manifests itself by delirium, mental excitement or hebetude, vomiting, or convulsive phenomena.

Sunstruck patients exhibit excessive elevation of temperature, psychic unrest soon followed by somnolence, redness of the face, contracted pupils, vomiting, general or partial convulsions, and increased frequency of the pulse and respiration.

Prognosis.—The disease is often very grave, and either terminates in death preceded by coma and general convulsions, or the symptoms gradually subside, and recovery ensues after a protracted period of convalescence.

Regardless of the causes that may have led to cerebral hyperemia, the *treatment* must always be begun by elevating, and applying cold applications to, the head; applying diaphoretics to the skin, such as vinegar compresses or mustard plasters to the calves of the legs; and by the internal exhibition of laxatives. The use of leeches behind the ear is often followed by a rapid subsidence of the alarming symptoms; but if there are signs of cardiac weakness, abstraction of blood is contraindicated. When the patient is in a stuporous condition cool baths, at 25° to 22° R. (88°–81.5° F.) with cool affusions, 15° to 10° R. (66°–54.5° F.), often act surprisingly well. If convulsions are present, chloral by the rectum (0.25–0.5 to 1 gm. (4–8 to 15 gr.)) is also indicated (see CONVULSIONS, p. 971). The first sign of cerebral hyperemia demands absolute psychic and bodily rest and a liquid diet consisting of milk and broths.

The *prophylaxis* consists in protecting the child against sunstroke and prohibiting excessive mental exertion or too long a period of lessons, either at school or at home, without the interruption of a recess.

Brain Tumor.—Brain tumors are comparatively not so very rare in childhood, but not infrequently they remain latent and are therefore often discovered only incidentally at the autopsy. They include the following forms, enumerated in their order of frequency: Tuberculous growths, glioma, echinococcus, cysticercus cellulosæ, gumma, and sarcoma; and may begin in the substance of the brain or may start in the bones of the skull and gradually invade the brain.

They all have in common a certain group of clinical *symptoms*, which are known as focal symptoms. Aside from the paralytic phenomena, which depend on the seat of the disease, brain tumors in the case of older children manifest themselves by headache, occasional vomiting, slowing of the pulse, vertigo and rotary movements, paralysis and paresthesia, partial unconsciousness, and the occurrence of choked disk or optic neuritis. As the phenomena gradually increase, epileptic or apoplectic attacks are superadded.

The focal symptoms proper depend upon the seat of the tumor and are clinically identical with the symptoms occurring in adults.

Brain tumors in childhood are found chiefly in the cerebellum. **Cerebellar tumors** are characterized chiefly by occipital headache, cerebral ataxia, especially of the lower extremities, vertigo and staggering gait, nystagmus, strabismus, dilatation of the pupils, optic neuritis, and secondary hydrocephalus.

Other seats of predilection are the corpora quadrigemina, in which situation a tumor causes paralysis of the oculomotor nerve, dilatation and rigidity of the pupils, choked disk with atrophy of the optic nerve, and blindness. When the tumor is located in the pons there is crossed paralysis of one-half of the body with unilateral or bilateral involvement of the facial nerve and of the muscles of mastication, and involvement of

the auditory, trifacial, oculomotor, and abducens nerves on the same side.

In paralysis of the hypoglossus there is interference with speech and deglutition. Disease of the optic thalamus manifests itself in athetosis and hemichorea, while a lesion in the region of the central or paracentral convolutions causes *crossed* (contralateral) monoplegia of the arm or leg, paralysis of the facial or hypoglossus, and sometimes aphasia.

The *symptoms* of cerebral pressure gradually increase, and death ensues usually with the picture of a general meningitis.

The *treatment* of brain tumors offers some hope of success only when the disease is syphilitic, the treatment of which will be found under the heading of SYPHILIS. Lumbar puncture should not be resorted to in cases of brain tumor.

Breast, Irritable. See MASTODYNIA.

Breast of Newborn Infant, Inflammation of. See MASTITIS NEONATORUM.

Bright's Disease. See NEPHRITIS.

Bronchi, Inflammation of. See BRONCHITIS.

Bronchial Asthma. See ASTHMA, BRONCHIAL.

Bronchial-gland Disease.—Just as enlargement of the lymphatic glands on the surface of the body may be caused by a great variety of irritants, simple catarrh or other diseases of the respiratory organs may lead to swelling of the mediastinal, bronchial, and pulmonary glands. Although the acute glandular swelling subsides in a great majority of cases, it may—depending upon the individual's constitution and the severity of the infection—go on to chronic enlargement, which in turn may lead to suppuration and caseation or tubercle formation.

The last-mentioned condition is found so frequently in

young children, that in many cases the source of pulmonary or general tuberculosis must be sought in disease of the bronchial glands. The tuberculous process spreads from these to the lung and the neighboring glands, and later to more remote ones, and thus produces morbid phenomena, the character of which will depend upon their localization. Even in children who have died of a tuberculous process in the abdominal organs or the brain it is found regularly at the postmortem that tuberculous disease of the bronchial glands was the primary condition.

Not infrequently there is a total absence of clinical symptoms; but whenever other tuberculous processes are present, implication of the bronchial glands may be inferred and is very probably present. Signs of the disease are found with comparative frequency at autopsies performed on children who have died of acute infectious diseases, and thus throw light on the true cause of the fatal termination.

Disease of the bronchial glands manifests itself by a series of *symptoms* which, if properly interpreted, are of great value in making the *diagnosis*. The clinical picture is dominated by the phenomena usually seen in phthisis, which consist in gradually increasing emaciation, dryness of the skin, increased thirst, a slight cough (barely distinguishable from hawking), and usually an evening rise of temperature. Thus chronic disease of the bronchial glands may remain latent for some time until some of the above-mentioned exciting factors lead either to enlargement of the glands or to changes in the glandular parenchyma, and thus give rise to special symptoms.

The most *important symptom* in this respect is the interference with respiration, due to the compression of the air passages. This manifests itself by a loud, dry sawing noise, resembling stenotic breathing, which is audible also during sleep. Paroxysms of loud ringing cough, brought on by crying or due to the tracheobronchial catarrh which is frequently present, often occur, and, owing to its spasmodic character, the cough is often mistaken for whooping-cough. As the enlarged glandular masses may either distort or com-

press the vagus or some of its branches (such as the superior or inferior laryngeal nerve), the above-mentioned attacks thus find another anatomic explanation. These coughing attacks vary in frequency, and in many cases are brought on by very slight changes of temperature. The occasional attacks of hiccough may also be attributed to vagus irritation.

In rare cases pressure on larger blood-vessels may lead to dilatation of superficial veins; to local edemas; and, by pressure on the innominate vein when the head is overextended, to a more or less marked venous hum at the manubrium (Smith's phenomenon). Dysphagia is sometimes present from compression of the esophagus. In most cases the superficial cervical and axillary glands are enlarged.

In accordance with the chronic character of the pathologic changes in the gland tissue, the general condition becomes progressively worse; the elevations of temperature, which at first are very slight, become more marked and assume the type of a phthisic curve. During this stage auscultation, and sometimes percussion, may bring out changes in the lungs which point to the presence of an infiltration spreading from the affected glands. Circumscribed areas of dulness, which can be referred to enlarged glands, are found on both sides of the vertebral column between the shoulder blades or at the manubrium, while transmitted bronchial breathing and râles are heard over the same areas.

In the presence of tuberculous degeneration and suppuration of bronchial glands, a glandular abscess may rupture into the mediastinum or into a bronchus, or a portion of a broken-down gland may be discharged into the bronchial branches and bring on attacks of asphyxia which may end fatally.

The extension of the tuberculous process to the lungs produces the physical signs of a diffuse infiltration, and, if softening and degeneration of the glands continue, pseudocavities are formed and the same clinical signs are obtained as in pulmonary phthisis.

As is to be expected from the etiology and pathogenesis, tuberculous enlargement of the bronchial glands in most cases

runs a chronic, insidious course, terminating in death from extension of the process or from the development of complications.

Treatment.—When chronic enlargement of the bronchial glands has been diagnosticated or when its presence may be assumed with tolerable certainty, the treatment is the same as in tuberculosis. As in the case of external glandular swellings, an attempt should be made to stimulate absorption by inunctions with soft soap. In cases in which the existence of bronchial-gland disease is surmised and in which no pronounced signs of tuberculosis are demonstrable, the use of iodin preparations should be cautiously resorted to: Syrup of the iodid of iron, 1 to 3 c.c. (15–45 min.) per diem; potassium iodid, 0.5 gm. (8 gr.) per diem; pastils of iodoferratin (Jahr), 2 to 4 per diem; cod-liver oil and arsenic preparations; and, externally, inunctions with 6 per cent. iodovasogen or ichthyol ointment along the vertebral column and the manubrium.

In addition to these measures brine or sea baths should be advised. In any case the dwelling must be dry and sunny, and the child should be sent to the country for a protracted stay, if possible in a southerly climate or at the seashore.

Bronchiectasis.—This condition sometimes develops after chronic bronchial catarrh, from the pressure of the stagnating secretions, as a concomitant of whooping-cough or measles, especially after pleurisy and pneumonia with partial gangrene, and from compression of the bronchus by diseased lymph glands. In the last-mentioned condition the affected region undergoes contraction, as a result of the proliferation of connective tissue; this is followed by dilatation of the bronchial branches contained in the contracted portion.

Bronchiectatic cavities are usually cylindric or spindle-shaped, but in rare cases the dilatation may be large and sacculated, so that the physical signs may simulate a cavity. In these cases the accumulated secretion is mucous, purulent, and offensive, and is often evacuated in large quantities, especially in the morning, after a violent paroxysm of cough.

Extensive bronchiectatic disease may, by producing venous

obstruction, cause disturbances of the peripheral circulation and club-shaped enlargement of the distal phalanges of the fingers (clubbed fingers).

The *clinical picture* of bronchiectasis is accompanied by that of chronic catarrh or a developing phthisis, the resemblance being all the greater on account of the temperature-elevations which often occur periodically during the disease.

The severe paroxysms of cough which occur suddenly, especially on awaking or in a certain position of the body, the fetid odor of the breath, the fact that the general condition is often but little affected, and the negative result of the bacteriologic examination of the sputum for tubercle bacilli, are points to be utilized in the *differential diagnosis.*

The *prognosis* in bronchiectasis is determined by the cause and by the extent and the degree of the process. In severe cases rupture into the pleura may take place and may be followed by pneumothorax, permanent destruction of the adjacent portions of the lung, and metastasis into the bronchial glands, which may undergo purulent disintegration.

Treatment.—Inhalations of balsamic substances, as in the case of chronic bronchial catarrh, are indicated. Thus, when the secretions are offensive, benefit may be expected from inhalations of a 1 to 2 per cent. solution of carbolic acid, or a solution of thymol, alum, tannin, or tincture of eucalyptus. In order to bring about evacuation of the accumulated secretion in the bronchiectatic cavities, Quincke's procedure, which consists in raising the foot of the bed and elevating the patient's legs, may be employed several times a day for from one-half to one hour, with methodical compression of the thorax (Gerhardt) to assist in expiration (see EMPHYSEMA). The procedure has distinct value and its good effects are at once apparent.

Internally, creosotal; turpentine, 5 to 10 drops; or copaiba balsam, 10 to 20 drops, to be taken in milk or in a mucilaginous mixture three times a day, may be prescribed; or,

℞ Terpene hydrat., 1 (m xv);
Spir. vin. rect., 10 (f℥iiss);
Syr. cort. aur., 15 (f℥ss);
Aq. dest., 100 (f℥iij).—M.
Sig.—One dessertspoonful every three hours.

Myrtol or eucalyptol (1½ gr.) also may be given in capsules several times a day. Narcotics should be avoided as much as possible, even when the cough is severe.

In every case a nourishing diet and a sojourn in a mountainous and wooded region or at the seashore are to be recommended during convalescence.

Bronchiolitis. See BRONCHITIS, CAPILLARY.

Bronchitis, Capillary (*Bronchiolitis*).—Capillary bronchitis usually represents the continuation of a tracheobronchial catarrh, but in rare cases may be the primary disease, being caused by some infection or septic influence of sufficient severity to cause inflammation of the mucous membrane of the smaller and smallest bronchial ramifications. In accordance with the extent of the process, which frequently can be only surmised, the disease is designated either bronchiolitis or capillary bronchitis.

The *etiology* and the *pathologic changes* in the mucous membrane are exactly the same as in tracheobronchial catarrh, but the more extensive involvement of the bronchial tree causes graver disturbances. Clinically, therefore, it may be said that the severity of the symptoms is in proportion to the extent of the disease and inversely proportional to the age of the individual.

The *symptoms* are as follows: The onset is abrupt, and in young children the disease is ushered in by intense fever, often accompanied by convulsions; in older children by a chill. The temperature persists and shows but slight remissions, or, if the disease develops as an extension of a tracheobronchial catarrh, an additional secondary rise of temperature takes place. As the narrowing of the smaller bronchi progresses, the respirations become accelerated and labored, and the symptoms characteristic of severe dyspnea manifest themselves. The thorax is more deeply retracted and becomes furrowed, especially at its lower portion along the insertion of the diaphragm; there is fluttering of the alæ nasi; the nostrils are often covered with a sooty deposit, and the auxili-

ary muscles of respiration (sternocleidomastoid, scaleni, trapezoid, etc.) are brought into play. The cough is at first dry, short, and painful; often occurring paroxysmally.

As interference with the breathing increases, the disturbance of the general condition becomes more marked, and pallor, puffiness, and cyanosis of the face and of the mucous membrane of the lips are noticeable. Not infrequently the disease begins abruptly in infants who had previously been quite well, and within the first twenty-four hours collapse and even death may occur. Percussion of the chest elicits a barely perceptible diminution of the normal resonance; on auscultation dry râles are at first heard over both lungs. Later, medium-sized and small moist râles occur, scattered more or less over the entire lung.

The course of an extensive bronchitis varies and depends particularly on the extent of the disease, but chiefly on the age and general condition of health and strength of the infant.

In a favorable case the auscultatory phenomena begin to disappear, and in the course of one to two weeks the temperature gradually falls, the exacerbations becoming less and less marked, especially in the evening. The general condition improves; sweating occurs, and the frequency of pulse and respiration diminishes; the cough becomes easier and looser; the dry tongue regains its moisture, the appetite improves, and the thirst which often tortures the patient diminishes.

From this description of the clinical course it follows that the *prognosis* of this disease is often extremely doubtful and depends on a number of secondary factors; such as the child's age and, especially, constitution.

In the case of rachitic and scrofulous children and those in whom the bronchiolitis has occurred as a complicating factor of some other disease, the prognosis is often very grave. Pulmonary edema, cardiac weakness, asphyxia, or some cerebral complication in these cases often ushers in the lethal termination. A bronchitis developing secondarily to whooping-cough or measles in debilitated and rachitic children, or in children living amid bad hygienic surroundings, is apt to run

a protracted course and (while recovery is not altogether impossible) usually ends fatally with all the appearances of a general cachexia.

Treatment.—Internal medication consists in the exhibition of expectorants and, when the integrity of the heart is threatened, cardiac stimulants (see BRONCHITIS, CATARRHAL), while narcotics of every kind are contraindicated. Among the stronger cardiac stimulants may be mentioned liquor ammonii anisatus or acetate of ether, 10 to 20 drops in 70 c.c. (2 fl. oz.); or equal parts of spirits of ether and liquor ammonii anisatus, 2 to 5 drops every half or one hour in a teaspoonful of sweetened water; or,

℞ Camphor. trit., 0.05 (gr. ¾);
Acid. benzoic., 0.03 (gr. ½);
Pulv. acaciæ, 0.3 (gr. v).
M. ft. chart. No. 1.
Sig.—One every two hours.

Camphor emulsion (1 : 200), one coffeespoonful every one or two hours, and, if necessary, hypodermic injections of camphorated oil or camphorated ether (1 : 10), may also be employed.

In addition to the above-mentioned drugs, stimulants, in the form of tea, black coffee, or wine, should be given. Repeated inhalations of oxygen in sufficient quantities and Schultze's method of artificial respiration are also valuable procedures.

The indications for *local treatment* are to stimulate the activity of the skin and combat the fever. For this purpose wet half-packs, to be renewed every half to one or two hours, are applied. Under certain circumstances, especially when the cough is tight and secretion is dry, and the first signs of cardiac weakness become manifest, a warm bath (25°–28° R.—88°–95° F.), with cold affusions to the chest and back, may be ordered two or three times a day. (The child's body must be briskly rubbed while it is in the bath, and a few liters of water at the temperature of 15° to 20° R. (65°–77° F.) quickly poured over the naked chest and back; after which the child is rubbed dry and put to bed.) If collapse

takes place during the bath, the treatment must be discontinued. On account of this possibility, heart stimulants, such as cognac, coffee, camphor emulsion, or a camphor injection, should be laid ready-to-hand before each bath. In cases of severe capillary bronchitis in infants a hot mustard bath should be ordered several times a day, and, in addition, a mustard plaster applied once a day, to exert a powerful effect on the skin, this to be kept up until signs of improvement make their appearance. A mustard plaster is made by mixing a handful of powdered mustard with a little lukewarm water, adding enough hot water to make a paste and spreading it on a cloth. This is wrapped around the child's trunk and covered with a blanket, which is well tucked in at the neck, so that the smell of the mustard will not get into the lungs. Fifteen minutes later a warm bath is given, after which the child is wrapped in dry blankets and allowed to sweat for some time longer.

In affections of the air passages (more than in any other disease) great care is necessary to insure the purity, moisture, and uniform temperature of the air in the room, and to supply proper nourishment for the patient. The diet must be regulated according to the age and the state of the fever; the same dietetic precautions as those mentioned in connection with tracheobronchial catarrh must be observed. It should be mentioned, also, that small children should be taken up and carried about at short intervals; larger children, if confined to bed for a great length of time, must be made to change their position frequently.

Bronchitis, Catarrhal (*Tracheobronchial Catarrh; Bronchial Catarrh*).—Next to disorders of the digestive tract, catarrhal affections of the respiratory mucous membranes are the most frequent diseases of childhood. They attack children of a tender age and especially follow exposure to a sudden change of the weather, to high winds, dust, or abnormal dampness, either in the outside air or in the house.

In addition to these causes tracheal and bronchial catarrhs occur in association with diseases of the nose, pharynx, and

larynx, or as sequels to certain infectious diseases, especially measles, influenza, typhoid fever, variola, and whooping cough. The disposition to bronchial disease is almost universal, although here, again, sickly, rachitic, and scrofulous children, and those who live among bad hygienic surroundings, manifest a peculiar liability to recurrent attacks of catarrh of the respiratory passages.

The *pathologic appearances* of bronchial catarrh consist in acute redness and swelling of the infected mucous membrane, with increased secretion of mucus—at first tenacious, and later becoming frothy and of a whitish or blackish color, and finally purulent.

In exceptional cases the process does not extend beyond the bifurcation of the trachea; it then constitutes a simple tracheitis. As a rule the catarrh extends beyond the trachea and involves the larger bronchi, thus giving rise to bronchitis.

The disease begins acutely with a variable degree of fever, but the most *important symptom* is the cough. At first it is short and dry and associated with visible signs of pain; after a few days it becomes looser and softer. The child's sleep is often disturbed by the nocturnal paroxysms, which usually last longer than those which occur during the day.

Auscultation elicits over the catarrhal portions of the lungs merely accentuated, rough, vesicular breathing with prolonged expiration and dry râles; sometimes there is diminished vesicular breathing at the apices, and, later, coarse or mixed crepitant and mucous râles may be heard. The percussion note is unaffected, but on *palpation* sonorous and sibilant rhonchi may be distinctly felt over the sternum and at each side of the vertebral column.

The respirations are accelerated in accordance with the extent of the catarrh and the degree of stenosis in the air passages. Sometimes there is slight cyanosis.

Simple tracheobronchial catarrh lasts from two to three weeks, even when there are no other complications. The disappearance of the fever and of the auscultatory phenomena is a sign of beginning improvement. Repeated elevation of the temperature or increase in the frequency of the respira-

tions, with the reappearance of auscultatory phenomena, indicates a relapse or an extension of the catarrh to the smaller bronchi.

In simple tracheobronchial catarrh the *prognosis* is usually favorable, even in children who are not well developed and are not living among the best hygienic surroundings; the probability of recurrence, however, is greatest in children of this class.

The *treatment* of bronchitis is limited to controlling the initial fever (which is often high) and promoting expectoration. In addition to satisfying these two main therapeutic indications, the hygienic surroundings must be improved, thorough ventilation of the sick-room secured, and the patient's strength carefully looked after.

The child should remain in bed for some time after the fever has subsided; the air in the room must be frequently and thoroughly renewed, contain the proper degree of moisture, and the presence of soot or dust must be avoided. Except in the case of infants at the breast, the diet should be restricted during the fever in accordance with the diminished appetite, and consist solely of milk, weak coffee, malt-coffee, or cocoa, jellies and aspic, thick soups (not too salty), and, if there is constipation, preserved fruits. Weakness must also be combated dietetically by means of tea, if necessary with the addition of a little cognac (a teaspoonful to a cupful of tea), wine or black coffee administered in teaspoonful doses. Liquor ammonii anisatus and spirits of ether, equal parts, 10 drops every half-hour in sweetened water, are also effective.

In recent cases attempts should always be made to cut short the morbid process by means of diaphoretics. The child is put to bed and given a large hot drink. For this purpose the so-called diaphoretic teas (made from linden-flowers, elder-flowers, or orange-flowers) are suitable, although hot lemonade and a decoction of marshmallow root are equally efficient and more palatable. The addition of a small quantity of alcohol, in the form of cognac or rum, appears to increase the efficacy of the hot drink. Others prefer copious draughts of hot milk mixed with an equal

quantity of some alkaline saline water, such as Gleichenberg, Ems, or Selters. The addition of sodium salicylate, for example, 0.5 gm. (8 gr.), for a child five years old, and 1 gm. (15 gr.) for a child ten years old, is a good plan, especially when the child has fever; but the stronger diaphoretic remedies, such as an infusion of jaborandi or pilocarpin, can be dispensed with. At the same time a Priessnitz compress is applied to the entire thorax and allowed to remain until the child, who must be well covered, begins to perspire freely. After the sweating has lasted three hours the entire body is rubbed dry, and after a change to dry, warm linen, the child is placed in another bed previously warmed for its reception.

When the initial fever is very high, on the other hand, full wet-packs or half-packs with water at room temperature are indicated, and should be renewed every fifteen minutes or half-hour for a time, and then, when the temperature subsides, every three or four hours. If the child is asleep, the pack may be left in place even longer.

The Priessnitz compress is specially indicated when the secretion is tenacious and there is painful, irritative cough; the application at the same time insures a proper degree of moisture in the inspired air. For the purpose of producing aqueous vapor, Siegle's inhalation apparatus is, however, more effective; in the case of infants it is placed near the bed, while older children may be made to inhale from the apparatus or from an earthenware vessel, from which the steam is conducted to the mouth and nose by means of a napkin folded in the shape of a funnel. Common salt or bicarbonate of soda may be added to the fluid, or the apparatus may be filled with an alkaline mineral water, such as Selters or Ems.

During the day the child should have a warm drink at frequent intervals, for which purpose the above-mentioned mineral waters diluted with equal parts of milk are suitable. Cold drinks should be avoided during the acute stage.

If the cough is dry and incessant it must be controlled, and sedatives must be given—if only because the constant coughing aggravates the pathologic process. Quite often narcotics

are required to control the cough: Tincture of opium (laudanum) from 2 to 10 drops, according to age, distributed at regular intervals over the day and night; Dover's powder, as many times 0.01 to 0.02 gm. ($\frac{1}{6}$–$\frac{1}{3}$ gr.) as there are years in the child's age; or cherry-laurel water, twice as many drops as there are years in the child's age—either of these to be given three or four times a day. Morphin hydrochlorate should be given only to children over three years of age in doses of 0.001 to 0.0025 gm. ($\frac{1}{66}$–$\frac{1}{26}$ gr.) several times a day; codein phosphate or hydrochlorate to children four years of age, 0.01 gm. ($\frac{1}{6}$ gr.) per dose; six years of age, 0.02 gm. ($\frac{1}{3}$ gr.); eight years of age, 0.04 gm. ($\frac{2}{3}$ gr.), twelve years of age, 0.08 gm. ($1\frac{1}{3}$ gr.) per dose. Heroin hydrochlorate is given in doses one-half as large as morphin. The various preparations of belladonna, hyoscyamus, and stramonium can be dispensed with.

Sedative drugs should be given either in a mucilaginous vehicle, such as gum arabic, an oil emulsion, emulsion of almonds, or a decoction of althea root, so as to act as sedatives on the pharyngeal organs which are chiefly concerned in exciting the cough. Expectorants may also be given at the same time; they are most effective when the dry catarrh has become moist and the tenacious secretion is beginning to become fluid.

In addition to the mineral waters which have already been mentioned, and which have a very mild action, the following drugs may be considered: Infusion of ipecac, 0.3–0.5 gm. (3–7½ gr.) to 70 c.c. (2 fl. oz.) of water; troches of ipecac root, each containing 0.01 gm. ($\frac{1}{7}$ gr.) of ipecac root; decoction or infusion of senega root, 3–6 c.c. (45 min. to 1½ fl. dr.) to 70 c.c. (2 fl. oz.) of water. Ammonium chlorid or sodium bicarbonate, of each 0.5 to 1 gm. (7½–15 gr.), may be added to the above-mentioned infusions. When expectoration is deficient and there is an abundance of tenacious mucus, the expectorants should be given without the addition of any narcotic; on the other hand, when the strength of the heart is good, apomorphin hydrochlorate, 0.01–0.02 gm. ($\frac{3}{20}$–$\frac{3}{10}$ gr.) to 100 c.c. (3 fl. oz.) with 5 drops of dilute hydrochloric acid may be ordered. When a heart tonic is indicated, liquor am-

monii anisatus or spirits of ether, 0.5 to 1 c.c.(8–15 min.) per diem should be prescribed.

In order to promote the expulsion of the mucus, Quincke's procedure may be recommended (see BRONCHIECTASIS).

Bronchitis, Chronic.—As a sequel of acute bronchitis, but more frequently during the course of some constitutional disease, such as scrofulosis or rachitis, or after whooping-cough or some disease of the lungs, chronic catarrhal conditions of the bronchial mucous membrane develop, the chief *symptom* of which consists in an increased production of mucus or pus. Secondary changes in the bronchi in the form of cylindric dilatations, emphysema, or, especially in scrofulous children and in those who may be suspected of a tuberculous tendency, swelling of the bronchial and mediastinal glands may develop (see BRONCHIAL-GLAND DISEASE). The chief *symptom* of this disease is a constant, more or less severe cough, sometimes associated with the expectoration of a thick, purulent, tenacious, and often fibrinous or ichorous secretion, more frequently in the morning than during the night, and subject to constant exacerbations from the slightest external or internal influences.

On *auscultation*, staccato breathing or humming and whistling sounds mingled with large and medium-sized râles, are heard, and occasionally the signs of pulmonary emphysema (p. 136) are elicited on percussion. The *prognosis* of the disease in many cases depends on the patient's general health and on the possible presence of an inherited tendency to tuberculosis, as well as on external conditions of life.

The *treatment* must be regulated according to the original causes of the disease, which must be subjected to appropriate treatment. Every fresh attack of catarrh must be corrected by the administration of expectorants, such as ipecac, senega, ammonium chlorid or carbonate (see BRONCHITIS, CATARRHAL), sometimes with sodium iodid, 0.5–1 to 2 gm. (8–15 to 30 gr.) per diem.

In cases of dry chronic bronchitis but little good may be expected to result from medicinal treatment, and the question

of a change of climate and a course of spa treatment with bath and water cures (alkaline and alkaline muriated or sulphurous waters) should be discussed. Cases of chronic bronchitis with copious, purulent expectoration (bronchoblennorrhea), on the other hand, may be favorably influenced by the so-called balsamics as well as by expectorants and remedies given to dissolve the mucous secretion. Balsams may be administered either by the mouth or in the form of inhalations. Rectified oil of turpentine, in doses of 5 to 10 drops, may be taken in a teaspoonful of milk and washed down with several mouthfuls of milk; or in gelatin capsules of 5 drops each, followed by milk or bread and butter. This drug is contraindicated, however, in the presence of renal diseases. Terpene hydrate 1 c.c. (16 min.), spir. vin. 10 c.c. (2½ fl. dr.), aqua dest. 100 c.c. (3 fl. oz.), up to 5 teaspoonfuls daily, is a good prescription; or terpinol in gelatin capsules up to 0.5 c.c. (8 min.) per diem. Balsam of Peru or balsam of tolu occasionally employed, but the latter is quite frequently used as an ingredient of expectorant mixtures, 15 c.c. (½ fl. oz.) per diem. In obstinate cases it is advisable to try creosotal and similar preparations.

In addition, inhalations of rectified oil of turpentine should be practised several times a day, of which 10 to 20 drops are poured on a cloth and the latter held to the mouth and nose; or from ½ to 1 teaspoonful may be added to ½ L. of boiling water; or a Siegle apparatus filled with some mineral water to which 10 drops of the oil are added; or inhalations from ½ to 1 per cent. solutions of common salt, soda solutions, or some alkaline mineral water may be taken several times a day. Whenever there is a suspicion of disease of the bronchial glands or tuberculosis, the appropriate treatment (see TUBERCULOSIS) should be advised. In cases of emphysema, pulmonary gymnastics or the condensed-air treatment in the pneumatic chamber should be tried.

The general condition must not be neglected in chronic bronchitis. Aside from careful selection of the diet (milk, kefir, or whey), the patient must have plenty of fresh air and

should be sent to the seashore or to the mountains as a precaution against the disease itself or a possible recurrence.

Buhl's Disease (*Acute Fatty Degeneration of the Newborn*).—The extremely rare disease of the newborn which is known by this name presents pathologically the following *characteristic features:* Parenchymatous inflammation with consecutive fatty degeneration of the muscles, liver, kidneys, and heart muscle; icteric discoloration and hemorrhages into the skin and mucous membranes, the umbilicus, stomach, and intestine; and, finally, cyanosis followed by collapse.

Throughout the entire *course* of this disease, which often ends fatally after running a rapid course, there may be no rise in the temperature, although the disease is probably due to a septic infection.

Treatment is absolutely hopeless, but may, nevertheless, be directed against certain individual symptoms. The little patient should be kept warm and nourished as well as possible, and an attempt should be made to ward off the impending collapse by the administration of stimulants.

Bulimia (*Polyphagia*).—This symptom is met with chiefly in nervous, hysteric children, and not rarely in children who have been systematically allowed to eat too much; occasionally, also, as an indication of intestinal parasites, and in idiocy. Normal children differ from the mentally deficient in the fact that they exercise some selection in their food and are guided by their own, but not by a perverted taste (as in the case of imbeciles), although even among normal children some are occasionally found who will pick cotton or hair from clothing or other articles and swallow it either with or without food. The practice of eating mortar, chalk, lime, etc., is discussed under the heading of CHLOROSIS (see p. 78).

The *treatment* consists largely in education and control. When intestinal parasites are present, the administration of anthelmintic is indicated.

ns (*Combustio*).—In children even moderately exten-

sive burns often cause profound general disturbances, especially of the cerebral functions. High fever, vomiting, convulsions, or symptoms of meningismus are not uncommon, and not infrequently hemoglobinuria and intestinal catarrh lead to a rapidly fatal issue. Depending on the intensity, three degrees of burns are distinguished: inflammatory redness, vesication, and necrosis. Even comparatively circumscribed burns of the first two degrees may end in death from suppuration and pyemia.

The *treatment* depends on the intensity of the burn. In simple combustio erythematosa the affected area may be covered with an aseptic dusting powder or a compress of aluminum acetate. In the bullous variety the covering of the blebs must not be removed until a new epidermis has formed or the tension has become very great; after the blebs have been opened, the wound is either covered with a Bardeleben's dressing or lightly dusted with iodoform and covered with an ointment. Suitable ointments are: 5 per cent. boric acid; linseed oil and lime water, of each 50 c.c. (1½ fl. oz.), with 0.05 to 0.10 gm. (¾–1½ gr.) of thymol; 5 to 10 per cent. iodoform-vaselin; or,

℞	Bismuth subnitrate,	9.0 (ʒij gr. xv);
	Boric acid,	4.5 (ʒj gr. viii);
	Lanolin,	70.0 (℥ij ʒiss);
	Olive oil,	20.0 (ʒv).—M.

Or, finally, Ritser's anesthesin, 5 to 10 per cent., with lanolin. The ointment is covered with layers of cotton, and held in place with a few turns of a roller bandage loosely applied.

Burns of the third degree require the same treatment; when the line of demarcation develops and the necrotic portion begins to separate it should be removed and the wound-surface covered with an aseptic dressing. The tendency to cicatricial contraction and the resulting deformity after the healing is to be borne in mind during the course of the treatment—eventually a plastic operation may be necessary. The

treatment of the resulting scars by the ultraviolet rays (Finsen) is a new departure in therapeutics.

Owing to the danger of heart-failure, stimulants of every kind must be administered. In severe cases and charring of the tissues the water-bed is recommended. Thirst is relieved by giving large quantities of some lukewarm beverage; pain, by opiates in suitable doses.

Calculi, Renal. See PYELITIS.

Cancrum Oris. See NOMA.

Capillary Bronchitis. See BRONCHITIS, CAPILLARY.

Caput Obstipum. See TORTICOLLIS.

Caput Succedaneum.—This is a swelling upon the scalp caused by protracted labor, and consists either in serous infil-

FIG. 12.—Transverse section through a caput succedaneum: *D*, Dura; *K*, bone; *P*, periosteum.

tration of the skin, or hemorrhage between the scalp and the outer integument (spurious cephalhematoma), which often occupies the entire occiput. The points in the *differential diagnosis* from cephalhematoma are the extension of the tumor beyond the sutures, the absence of a bony rim, and the comparatively rapid and complete disappearance (see Fig. 12).

Cardiac Dilatation.
Hypertrophy.
Lesions, Congenital.
Murmurs.
Palpitation, Nervous.

See HEART, DISEASES OF.

Caries and Necrosis of Bones.—These affections may occur in a single bone or may be multiple, and usually develop on a scrofulous or tuberculous soil.

The *treatment* requires a correct surgical technic, although in the beginning conservative expectant treatment should be

FIG. 13.—Spina ventosa: Caries of the phalanges in a child eighteen months old.

tried—for cases that have been pronounced inoperable by the surgeon not infrequently recover after the use of various balneologic measures, which will be mentioned later.

The *internal treatment* is the same as for scrofulosis and tuberculosis. Special attention must be paid to the constitutional disease, which is most effectively treated by keeping the child in the country, by the use of iodin, brine, or sea baths, and a liberal diet containing as much fat as possible—discarding the use of drugs.

When the *diagnosis* between caries and necrosis is in doubt,

it is usually possible to arrive at a decision by means of the Röntgen rays.

Caries of the Vertebral Column. See SPONDYLITIS TUBERCULOSA.

Cartilage, Remains of.—In the region of the tragus, or over the center of the sternocleidomastoid, and usually on both sides of the body, small spheric appendages (nodules), sometimes as large as a hazelnut, are occasionally seen, covered by a thin and easily movable skin (Fig. 14). In the interior of the nodule a roundish body, as hard as a cartilage, is felt.

FIG. 14.—Cartilaginous tumor in front of the left ear of a newborn infant.

These appendages are pieces of cartilage that have been formed in the branchial arches as the result of some constricting process.

As these congenital anomalies do not disappear spontaneously they must be removed — if only for cosmetic reasons. Small villous folds of skin on the ears may be made to disappear by ligating them with sterilized silk or by means of a double suture.

Catalepsy.—Grave hysteria is sometimes accompanied by attacks of muscular rigidity, associated with loss of consciousness, diminution or abolition of reflex irritability, anesthesiæ, and analgesiæ.

Sometimes the attack, which, in view of the chief symptom, is also known as "Starrsucht" ("rigid sickness"), is preceded by a condition resembling an aura. The attacks are short and disappear, only to be repeated after variable intervals, often as the result of some trifling psychic cause.

The *treatment* calls for the same measures as those given in hysteria. During the attack strong faradic currents sometimes have a favorable effect.

Catarrh, Bronchial. See BRONCHITIS, CATARRHAL.

Catarrh, Intestinal. See ENTERITIS, ACUTE, OF OLDER CHILDREN.

Catarrh of Bladder. See CYSTITIS.

Catarrh of Bronchi. See BRONCHITIS, CATARRHAL.

Catarrh of Large Intestine (*Follicular Enteritis*). See GASTRO-INTESTINAL DISEASES OF INFANTS.

Catarrh of Middle Ear. See EAR, DISEASES OF.

Catarrh of Small Intestine (*Acute Enteritis*). See GASTRO-INTESTINAL DISEASES OF INFANTS.

Catarrh of Stomach. See GASTRO-INTESTINAL DISEASES OF LATER CHILDHOOD.

Catarrh of Trachea. See BRONCHITIS, CATARRHAL.

Catarrh, Tracheobronchial. See BRONCHITIS, CATARRHAL.

Catarrhal Angina. See ANGINA, CATARRHAL.

Catarrhal Bronchitis. See BRONCHITIS, CATARRHAL.

Catarrhal Icterus, or Jaundice. See JAUNDICE, CATARRHAL.

Catarrhal Laryngitis, Acute. See LARYNGITIS, ACUTE CATARRHAL.

Catarrhal Pneumonia. See PNEUMONIA, LOBULAR.

Catarrhal Stomatitis. See STOMATITIS, SIMPLEX.

Cephalalgia. See HEADACHE.

Cephalhematoma.—By this term is meant, anatomically, an infusion of blood between the pericranium and the bones of the skull (external cephalhematoma), or between the dura mater and the bones of the skull (internal cephalhematoma).

The *cause* of the condition is found usually in the delicate structure of the infant's blood-vessels and the hyperemia of the scalp caused by the act of parturition. Protracted labor and the use of the forceps are, however, the most important factors in the production of a hematoma of the head.

FIG. 15.—Bilateral cephalhematoma (on both parietal bones).

The tumor is usually seated on the presenting parietal bone; exceptionally, however, it has also been observed in children born by the breech presentation, in macerated fetuses, and in infants who have been delivered by Cesarean section.

External cephalhematoma presents itself in the form of a fluctuating tumor, often as large as an apple; the overlying skin may be normal or may have been injured by the blades of the forceps. It usually covers one or both of the parietal bones, but more rarely may be found over the frontal or the occipital bone; and is accurately limited by the fontanels or

sutures (Figs. 15 and 16). As a rule the tumor is not noticed until several days after birth and becomes more extensive after the first week.

In cases of internal cephalhematoma, with or without the presence of an external tumor, there are marked *cerebral symptoms:* Bulging of the fontanels, tonic convulsions (some-

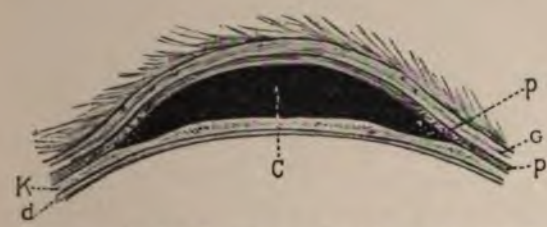


FIG. 16.—Transverse section through a parietal bone with cephalhematoma: *G*, scalp and overlying skin; *p*, periosteum with beginning formation of new bone; *K*, bone; *d*, dura; *C*, hematoma.

times unilateral), Cheyne-Stokes breathing with accelerated (often irregular and febrile) pulse, ending in death; or the tumor may subside, the extravasated blood becomes absorbed, and the above-mentioned symptoms disappear altogether.

While the *prognosis* of internal cephalhematoma is often very doubtful, the prospect of recovery from the external form is correspondingly favorable, providing no irritating or otherwise improper treatment is applied. As the blood absorbs, the tumor first becomes more resistant, and later, owing to the formation of bony substance in the periosteum, an area of parchment-like crepitation is felt, surrounded by a bony rim, which marks the limits of the tumor. A hematoma, of even moderate size, may require months for its absorption, and there remains at the site a circular thickening of the bone, due to the periosteal proliferation.

External cephalhematoma requires no *treatment.* In order to prevent pressure, the tumor may be protected by a ring of cotton, held in place with a cap or bandage.

The only possible *complication* of cephalhematoma is suppuration, which may lead to phlegmon, caries, meningitis, or sepsis, and usually cause death. Such an accident can only

be produced by some traumatism occurring during parturition or by operative interference.

Cerebral Anemia, Hemorrhage, etc. See ANEMIA, HEMORRHAGE, ETC.

Cerebrospinal Meningitis. See MENINGITIS, CEREBROSPINAL.

Cestodes. See INTESTINAL PARASITES.

Chafing. See INTERTRIGO.

Chemical Analysis of Milk. See MILK, EXAMINATION OF.

Chicken-pox. See VARICELLA.

Chilblain. See FROST-BITE.

Chlorosis (*Greensickness*).—The term greensickness (chlorosis) describes the general nature of the disease, which is comparatively common in young girls before or during the age of puberty.

Like anemia, it may be due to a *variety of causes:* Improper hygiene, deficient nutrition, rapid growth, psychic influences, overwork at school, mental exertion, or unsuitable clothing—as, for example, the too-early use of the corset. In most cases, inquiry into the history brings to light an inherited predisposition to the disease. Hereditary disturbances in the hematopoietic organs and associated changes in the heart and blood-vessels probably bear some etiologic relation to chlorosis. Depending on the extent of the pathologic changes, the blood is often found to be normal, except for a diminution of the hemoglobin; or the number of red blood-cells may be distinctly diminished and the leukocytes occasionally increased, the mononuclear elements being particularly promi-

nent, in which case the term **chlorosis gravis** is used to distinguish it from the form known as simple chlorosis.

The *first indications* of a beginning chlorosis are found in unusual nervous disturbances (with or without headache), a feeling of lassitude, psychic and physical fatigue, increased desire for sleep, the occurrence of palpitation and dyspnea on the slightest bodily exercise, and digestive disturbances. With the latter may be associated certain nervous disturbances, manifesting themselves by perverted appetite (pica) and a desire for eating such materials as mortar, coffee, chalk, earth, lead pencils, wood, etc. The skin and mucous membranes now assume a waxy pallor, the skin often showing a slightly greenish tint, from which the disease gets its name. The condition is always accompanied by psychic disturbances, showing themselves in sudden flushing of one or both sides of the face, headache, flashes before the eyes, muscæ volitantes, tinnitus aurium, and occasionally syncopal attacks, all of which are most marked before or during the period of menstruation. The patient always complains of an icy feeling in the peripheral portions of the body, which are often cold and clammy to the touch. In addition to the changes in the blood the pulse is usually small, the heart is sometimes found to be slightly dilated and the seat of anemic murmurs, while the so-called venous hum can be demonstrated in the vessels of the neck. The urine is pale, straw-colored, and of low specific gravity. The general nutrition in many cases is but little affected or even quite good.

In *most cases* of chlorosis the *prognosis* is favorable, although the disease often lasts for years. In *severe cases* the prognosis may be grave not only on account of the disease itself, but also on account of the diminished resistance and the presence of complications, especially gastric ulcer.

Treatment.—The diet must receive special attention, with due regard to the disturbance of taste; even acid articles may be permitted, providing they are not contraindicated by the iron preparations that are prescribed. The nutrition must be improved as much as possible by means of the various nutritive preparations. Anorexia must be combated by the admin-

istration of remedies to improve the appetite, as, for example, a compound decoction of cinchona, 5 gm. to 100 c.c. (75 gr. to 3 fl. oz.), with dilute muriatic acid, 20 drops, and syrup of bitter orange peel 15 c.c. (½ fl. oz.); or dilute hydrochloric acid, from 3 to 5 drops in a wine-glass half-full of water, three to four times a day; wine of condurango; Immermann's peptonated elixir of condurango; fluid extract of condurango; Nanning's extract of quinin three times daily, 10 to 20 drops; or tinct. amar., tinct. absynthi, tinct. chinæ composit., of each 10 to 20 drops, two to three times a day.

An important part of the treatment of chlorosis consists in the administration of the various iron, manganese and hemoglobin preparations (see ANEMIA). Blaud's pills and pil. sanguin. Kreweli are particularly useful. Bodily exercise should be restricted, and the patient should be sent for as long a time as possible to some resort where the air is good, particularly at the seashore or in a wooded region of moderate elevation. In cases of dyspnea or syncopal attacks from heart weakness, inhalations of oxygen, repeated several times a day, and carbonic-acid-gas baths, whether in Nauheim, Franzensbad, or Königswart, or artificial iron-and-peat baths act very favorably.

Cholera Infantum (*Acute Catarrhal Gastro-enteritis or Enterocolitis*).—The term cholera infantum is used to designate an attack of vomiting and purging occurring during the first or second year of life, with violent onset and rapid termination in collapse or death. The disease attacks both healthy and dyspeptic children, especially those who have been fed on artificial foods, particularly in the hot season of the year. Breast-fed children when weaned at this time of the year are also frequently exposed to the disease. Predisposing circumstances are overcrowded and unhygienic surroundings. Not infrequently acute lethal cholera infantum is the expression of a septic infection with staphylococcus albus and aureus or streptococcus pyogenes, manifesting itself in the clinical picture of a gastro-intestinal disease.

Symptoms.—After a short prodromal stage, characterized

by dyspeptic symptoms (or without any prodromal period), the disease begins with the ominous violent phenomena of vomiting, purging, and rapid loss of strength. The vomiting is at first abundant, but gradually diminishes to mere regurgitation of the ingested fluids mixed with mucus. The vomitus at first has a sour odor; later it becomes fetid or entirely odorless. The stools are abundant and contain an enormous quantity of water. At first they have a yellowish or greenish color and are mixed with particles of fecal matter; soon, however, they change to the characteristic "rice-water," almost odorless evacuations. The abundant loss of fluid and the resulting reduction of the percentage of water in the blood give rise to a typical clinical picture. At first the child is restless and cannot sleep; later he becomes apathetic and somnolent. The greater fontanel becomes more and more depressed, and the bones of the skull override. The eyes balloon out, the pupils contract, the nares are often covered with a sooty deposit; the cornea is less sensitive to irritants, and in the last stages of the disease becomes cloudy, dry, and covered with mucus, and shows the impression of the half-closed lid.

The mucous membrane of the mouth is cool, dry, or covered with a tenacious and sticky mucus. The urine is scanty. The skin, especially that covering the abdomen, loses its elasticity and becomes dry. The abdomen is at first distended, but soon becomes soft and often depressed; the body-weight diminishes rapidly. In the last stages of the disease the condition known as sclerema adiposum (p. 420) develops, particularly in the skin of the lower extremities.

The temperature is at first elevated, but rapidly falls, and finally becomes subnormal. The body, especially the face and extremities, feels cool or cold to the touch and presents a bluish and often a waxy appearance. Signs of extreme weakness, combined with the characteristic clinical picture which is described by the term hydrocephaloid, are always present; the child becomes apathetic, falls into a somnolent, comatose condition, from which it wakes suddenly with a hoarse, moaning cry; the head is overextended, and the child rolls from

side to side, burrowing into the pillow; the breathing becomes labored, accelerated, irregular, and, like the pulse, rapidly and progressively weaker.

Tonic contractures, "myotonic flexion contractures," develop, and toward the end general convulsions make their appearance.

Cholera infantum does not always go on to a rapidly fatal termination. The disease may lead to chronic enteritis or colitis with consecutive atrophy; or other complications may develop during the stage of convalescence, as, for example, in the vascular system, in the form of thrombi in the vessels of the brain or kidneys; or some catarrhal disease of the lungs may bring on the fatal issue more slowly.

In many cases perfect recovery takes place; and much depends on the age and constitution of the child, the way it has been fed, and, last but not least, the treatment employed.

The *treatment* may be divided into measures directed against the rapid loss of fluid and measures to combat the collapse induced by the dehydration of the tissues.

The first indication is satisfied by at once withdrawing milk in any form and, despite the vomiting, by administering large quantities of fluid in the form of ice-cold tea, alternating with albumin water and stimulants. If in spite of the plentiful administration of fluid the above-mentioned symptoms of blood-concentration make their appearance, enteroclysis, and if necessary hypodermoclysis, must be begun at once. In either case physiologic salt solution (0.6 parts of sodium chlorid and 0.2 parts of sodium carbonate to 100 parts of water) is administered every hour, either with an irrigator (per rectum), or the solution is warmed to 37° R. (115° F.) and injected under the skin. Either a Pravaz syringe or a sterilized trocar fitted with a tube and glass funnel or glass syringe may be used; from 6 to 10 Pravaz syringefuls are injected at a time, or from 30 to 100 c.c. introduced under the skin of the abdomen. As soon as the symptoms of *collapse* become more distinct, stimulants must be administered freely by the mouth, and hot packs, alternating with baths at 30° to

33° R. (99.5°–106° F.), and especially mustard baths, must be begun.

In order to guard as much as possible against cooling of the body, the child should be surrounded with hot-water bottles, and the clean linen should be well heated before using.

In addition to the stimulants used in acute intestinal catarrh, such as cognac, tokay, aromatic spirit of ammonia, spirit of ether, or acetic ether, hypodermic injections of camphorated oil, one-half to one syringeful, must be resorted to. Hot black coffee in teaspoonful doses may also be tried.

As regards the dosage of alcoholic stimulants referred to, from 10 to 25 drops a day are usually sufficient during the first month, and during the subsequent months it is rarely necessary to exceed from one to one and one-half teaspoonfuls. These measures must be kept up, day and night, until the appearance of obvious and lasting signs of improvement. Nutritive enemas with brandy are also of service. They are given as follows: Take the yolk of an egg and mix a little salt with it; add two teaspoonfuls of brandy, and then, while constantly beating the mixture, gradually add enough of the warm milk mixture which the baby has been taking to make 200 c.c. This quantity is then injected into the rectum through a rectal tube, which is introduced to a distance of about 20 cm. under the pressure of about half a meter (19 inches). If part of the enema is returned, it should be renewed in two hours.

Other complications following the disease must receive appropriate treatment.

As a matter of precaution no milk should be given during the period of convalescence even if no disturbing complications are present. In this respect the rules given for enteritis (see GASTRO-INTESTINAL DISEASES OF INFANTS) must be observed.

If the case is presented for treatment at the very beginning of the disease, lavage and irrigation of the intestine should be instituted at once, followed by calomel in large doses (for infants, 0.06 gm. (1 gr.) in three doses for the first day).

Chondrodystrophia Fœtalis. See NANISM.

Chorea Major.—Etiologically and clinically this rare disease belongs to the group of hysteric manifestations with exaggerated psychomotor disturbances.

The attack often occurs at a certain definite hour, and is usually preceded by other hysteric, irritative phenomena; during the attack proper the patients simulate more or less the picture of mania, "the state of being possessed." They indulge in the most complicated movements and keep up a continuous babble. The paroxysm often lasts for hours, the phenomena subsiding gradually. The patient frequently falls into a deep sleep, and on awaking has forgotten all about the attack.

The *treatment* of chorea major is the same as that of HYSTERIA (p. 238). The patient should be removed from her surroundings as soon as possible and sent either to a sanatorium or to relatives or friends who are not nervous.

Chorea Minor (*St. Vitus's Dance; Hemichorea*).—This psychomotor neurosis is characterized by general or partial muscular unrest with purposeful motions, which disappear during sleep.

Chorea minor is observed chiefly in children between the ages of five and sixteen years, and preferably attacks girls. In many cases a neuropathic disposition is found as the *cause;* but in many cases chorea occurs after some infectious or during convalescence from some other disease. Of the infectious ones, acute articular rheumatism and scarlet fever are the most important, especially when they have been complicated by endocarditis. Sometimes articular and endocarditic phenomena occur during the course, or after the termination, of an attack of chorea. Aside from these causes, which are probably toxic, St. Vitus's dance may be produced also by psychic influences, such as fright or fear, and often merely by attendance at school. The occasional endemic appearance of chorea in boarding-schools or families is no

doubt due to imitation of the movements of a choreic child by children with hysteric tendencies.

Except when due to intense psychic irritation, chorea rarely manifests its greatest degree of severity from the very onset. Usually the *course* is slow, and the attacks gradually become more severe. The first indications that a chorea is developing are found in psychic alterations. The child becomes moody, irritable, and inattentive, and soon twitching movements of the face and hands become noticeable. As a result of inco-ordinate movements of the hands the child begins to show an awkwardness in writing, while eating at table, or in making other motions that had previously been executed with ease and precision. The significance of these changes often is not recognized in the beginning, and the child may be punished for his supposed carelessness.

At first the twitchings are of short duration; soon, however, they increase in intensity and, in severe cases, involve also the lower extremities, the muscles of the tongue and pharynx, and, rarely, the diaphragm. Owing to the constant muscular unrest co-ordinated movements become impossible, and any attempt to execute them is attended by jerkings in the entire group of muscles concerned, accompanied by distortion of the facial ones. When those of the tongue and pharynx are implicated, the speech is greatly disturbed and deglutition is difficult or, in many cases, impossible. As previously mentioned, the muscular unrest usually disappears during sleep, which is, however, rarely undisturbed. As the choreic movements increase, more marked psychic alterations and states of depression are noticed.

Chorea may attack all the muscles of the body or only those of one side (**hemichorea**), and in rare cases only a single group of muscles (**monochorea**). Those of the eye almost always escape.

The *duration* of the disease in uncomplicated cases is from four to eight weeks, and often longer. Relapses are very common, and the intervals of freedom vary in duration.

The *prognosis* of chorea is usually favorable, although the possibility of complications is to be borne in mind, as under

certain circumstances they may mar an otherwise favorable prospect.

Treatment.—Choreic patients require, above all, rest in bed and protection against injury by means of suitable pads and cushions. In many cases certain hydrotherapeutic procedures act very favorably, such as warm full-baths or half-baths once or several times a day; or a wet pack, including the entire body with the exception of the arms, after which the child is wrapped in blankets. Choreic patients should be isolated as much as possible, and must not be subjected to any psychic emotion. The choice of internal remedies depends largely upon the severity of the motor disturbance. When there is great muscular unrest, bromin preparations, chloral-hydrate enemas, or even morphin or opium, internally or in suppository, must be employed.

Against the disease itself arsenic is deservedly recommended, usually in the form of Fowler's solution. While many choose to give large quantities, it is more customary to prescribe only the usual dose, 1 to 6 drops of Fowler's solution twice a day; or tablets of arsenious acid, each containing 0.001 gm. ($\frac{1}{70}$ gr.), one to three tablets once or twice a day after meals; or arsenic combined with an iron preparation, as, for example, Wellcome's tabloids of Blaud's pill with arsenious acid, containing 0.001 gm. ($\frac{1}{70}$ gr.) of arsenic, in the same dose once or twice a day; or pastils of ferratin with Fowler's solution (Barber).

In cases of chorea immediately following articular rheumatism, and in all acute cases beginning with fever, *diaphoretic treatment* should at first be instituted, with such drugs as sodium salicylate, aspirin, salipyrin, salophen, or citrophen. Sometimes antipyrin and phenacetin in rather large doses exert a favorable influence.

Throughout the course of the disease the patient's diet must be carefully looked after; while the quantity should be plentiful (Mastkur), all stimulating foods and beverages must be carefully avoided. The diet should consist principally of vegetables. In cases of difficult deglutition, artificial feeding with the stomach- or nasal-tube or with nutritive enemata is

employed. It is important to see that the bowels are properly evacuated, and that the sick-room is well ventilated.

During convalescence it is well to institute suitable gymnastic exercises, as it often becomes necessary for the child to be taught systematically all the associated movements which it had been able to perform before the attack. Mental work should not be resumed until several weeks after entire recovery. This may be hastened by sending the child away for a change of air, giving it nourishing food and preparations of iron or iron and arsenic; while some of the mineral waters, such as those of Guber, Levico, Bockleter, and Roncegno are of distinct benefit.

Chvostek's Sign. See FACIALIS PHENOMENON.

Ciliary Blepharitis. See EYE, DISEASES OF.

Cirrhosis of the Liver. See LIVER, CIRRHOSIS OF.

Cold in the Head. See RHINITIS, ACUTE.

Colic (*Enteralgia*).—Colic is the paroxysmal appearance of pain in the abdomen, and is therefore to be regarded merely as a symptom which occurs in nearly all diseases of the intestinal tract, being observed frequently in young infants, and more rarely in older children.

The *immediate cause* of colic is found in the abnormal generation of gases, the presence in the intestines of large fecal masses, indigestible fermenting particles of food, foreign bodies (the seeds of fruits), of a tapeworm, or a large mass of round worms.

In infants, especially during the first half-year of life, these attacks, which are known as "wind-colic," occur quite frequently and are often due to some slight dyspeptic disturbance causing fermentation of the fatty acids in the intestine, and flatulence.

The attack occurs suddenly, and in the case of infants is readily recognized by the loud crying and the drawing up of

the legs against the abdomen, which is hard and distended from meteorism. After the flatus has been passed the attack subsides, but recurs at varying intervals. Older children point to the abdomen, or, to be more exact, the region around the navel, as the seat of the pain. Whenever any grave cause can be excluded, the *prognosis* of colic is favorable.

The *treatment* includes the removal of the cause and, in the second place, measures to relieve the pain. If the attacks are frequent, some change must be made in the infant's food; in the case of larger children certain definite injurious articles must be prohibited. In any case the intestine must be cleared of the accumulation of fermenting and pain-producing fecal masses as rapidly as possible by giving calomel, castor oil, hydromel, or an infusion of the leaves of senna, 10 gm. to 80 c.c. (2½ dr. to 2½ fl. oz.).

In order to relieve the intestinal distention the internal medication should be preceded by irrigation or lavage with lukewarm water or camomile tea containing 1 to 2 teaspoonfuls of glycerin. In many cases the attack can be cut short by merely introducing the colon tube and carefully massaging the abdomen. Distinctly useful are warm compresses, a thermophore, and warm baths with massage of the abdomen, administered several times a day.

Colic, Renal. See PYELITIS.

Colica Mucosa. See MEMBRANOUS ENTERITIS, under *Gastro-intestinal Diseases of Infants.*

Combustio. See BURNS.

Composition of Human and Cows' Milk. See MILK, EXAMINATION OF.

Compression-myelitis. See MYELITIS.

Condylomata Acuminata.—These papillomatous proliferations, although rare in childhood, do occur occasionally.

They are most frequently observed about the genitals and in or around the anal cleft, where they become macerated and covered by a purulent secretion. The irritation of the skin or mucous membrane arising from the maceration leads to the formation of minute nodules, which gradually develop into the well-known cauliflower formations (Fig. 17).

FIG. 17.—Large papilloma of three months' standing situated at the anus of a child three months old.

Small excrescences may be *treated* by the application of bichlorid of mercury, 1 gm. to 100 c.c. (15 gr. to 3 fl. oz.) of alcohol every other day. Larger papillomata must be dusted with alum, calomel, or resorcin, or powdered savin tops, and covered with a cotton dressing. Very large papillomata require removal with the scissors or a curet. Paquelin's cautery or electrolysis has also been successfully used for this purpose.

Congelatio. See FROST-BITE.

Conjunctiva, Inflammation of. See CONJUNCTIVITIS NEONATORUM; also EYE, DISEASES OF.

Conjunctivitis. See EYE, DISEASES OF.

Conjunctivitis Neonatorum.—Purulent conjunctivitis is due to infection with vaginal secretion before or during par-

turition, or postpartum introduction of the secretion by the finger or through the medium of clothing or sponges.

The *cause* of ophthalmia neonatorum is the gonococcus of Neisser, but even in cases of apparently simple conjunctival catarrh a bacteriologic examination to determine its presence is always indicated.

The disease usually begins between the second and the fifth days of the infant's life. The palpebral conjunctiva is reddened, swollen, and velvety. The secretion has a yellowish color or may resemble meat-juice, and collects between the tightly-closed lids. It is soon purulent, the lids becoming swollen and edematous (Fig. 18). As the inflammation spreads, the bulbar conjunctiva is also involved. This brings with it the danger of corneal involvement, and the destruction of corneal tissue is often, in many cases, so widespread that it is followed by permanent disfigurement or blindness. Statistics have shown that ophthalmia neonatorum can be prevented by adopting certain prophylactic measures. To this end the vagina may be irrigated antepartum with a disinfectant. In any event the method recommended by Credé should be adopted: This consists in the instillation, immediately after birth, of a few drops of a 2 per cent. silver nitrate, or a 10 to 20 per cent. protargol [or argyrol], solution, into the conjunctival sacs.

FIG. 18.—Conjunctivitis neonatorum.

The *treatment* of a fully developed case consists in the application of ice-compresses or compresses wrung out of a cool 2 per cent. solution of boric acid (changed every five minutes), together with thorough cleansing of the conjunctiva with cotton-wound applicators saturated with a 3 per cent. boric acid, or a weak potassium permanganate or 1 : 5000 bichlorid, solution. The conjunctiva must be thor-

oughly cleansed in this way several times a day, and, in addition, must be painted once a day either with a 1 to 2 per cent. silver nitrate or a 3 to 5 per cent. protargol, followed by a weak saline, solution. If, as rarely happens, only one eye is attacked, a protective bandage must be applied to the sound eye in order to prevent its infection.

If any complications occur, the case should, wherever possible, be treated by a specialist.

Constipation.—Premature infants and those who are debilitated from diseases (especially dyspepsia and intestinal catarrh) which have impaired the muscular tissue of the intestines, manifest a predisposition to constipation.

But the condition is found only too frequently in older children and may be due to a variety of *causes:* Aside from previous disease of the intestine or peritoneum, such as perityphlitis, peritonitis, typhoid fever, and the like, associated with atony of the bowels, the diet (too much meat), lack of exercise, nervous factors, attendance at school, a false sense of modesty, and heredity, are contributory factors. A frequent cause of constipation is found in diseases of the rectum—rhagades or fissures—the fecal masses being retained reflexly on account of the pain which attends defecation. Anemia, chlorosis, and prolonged rest in bed may increase an already existing predisposition to, or originate, constipation. These secondary causes must be distinguished from primary conditions, such as abnormal kinking with hypertrophy and dilatation of the colon due to some congenital stenosis or anomaly of the bowel. For the sake of completeness, that form of constipation which follows stenosis of the pylorus, whether of spastic or other origin, may be mentioned.

In the condition known as **Hirschsprung's disease** (consisting in hypertrophy and dilatation of the colon) the large intestine is found to be greatly increased in length and circumference, and on microscopic examination hypertrophy of the longitudinal and circular muscle fibers is discovered. In this not very common disease the abdomen sometimes undergoes an excessive increase in size, and the hard, scybalous masses are evacu-

ated only after various therapeutic measures have been resorted to, and never without great pain and discomfort.

In constipation due to some secondary cause the abdomen appears more or less enlarged and dome-like, the position of the diaphragm is high, the liver is displaced upward, the color of the skin is pale and yellowish, the tongue coated, and the odor of the breath fetid; anuria is present; the child is irritable or melancholy; sleep is disturbed; and occasionally the skin is the seat of eczematous, pruriginous, or urticarial eruptions. Elevation of temperature may also be present, the fever disappearing rapidly after a copious evacuation of the bowels. Among other *sequelæ* we observe prolapse of the rectum, hemorrhoids, fissures in the rectum, and sometimes even umbilical and inguinal hernias. In any case of severe chronic constipation a digital examination of the rectum must be made, in order to obtain absolutely positive information as to the size of the lumen and the ampulla, and the possible presence of hard, stony fecal masses.

The *treatment* is to be determined by the cause. In Hirschsprung's disease laxatives and irrigation must be employed daily in order to induce an evacuation of the bowels. In this, as in other forms of chronic constipation, electricity is useful to improve the tone of the diseased intestine.

The most important external measures against sluggishness of the bowel are the hydrotherapeutic procedures, such as Priessnitz's abdominal binder, rain baths, Scotch douches, half-baths with cold affusions to the abdomen, and a protracted course of abdominal massage. Internal medication may be divided into the administration of mineral and vegetable cathartics, colonic irrigation, and regulation of the diet.

Mineral laxatives include the so-called bitter waters, such as Püllna, Saidschitz, Seidlitz, Hunyadi Janos, Franz Josefs-Quelle, Bitterquelle Friedrichshaim, Igmánder Bitterwasser, Mergentheim, and others; alkaline saline waters: Marienbad (Kreuzbrunnen and Ferdinandsbrunnen), Franzensbad (Franzensquelle), Elster (Salzquelle), Tarasp (Lucius- and Emeritaquelle).

For small children milk or sugar may be added to these to

disguise the taste, the dose being from 1 to 5 tablespoonfuls, given in the morning before breakfast. In the same way magnesium sulphate, magnesium citrate, or effervescent magnesium citrate, in the dose of 1 tablespoonful to a glassful of water, may be given.

Seidlitz powder (of which one-half is the dose) and effervescing lemonade should also be mentioned, because they are more acceptable to many children than the other remedies.

Drastics must be excluded from the list of medicinal agents when a laxative is to be employed for any length of time, and the preference given to the milder drugs.

For infants magnesia (two knife-points daily), or the well-known pulv. magnesiæ cum rheo in equal parts (same dosage), in one tablespoonful of sweetened water, are suitable.

Older children require a larger dose. The following are also recommended: fluid extract of cascara sagrada, one-quarter to one-half teaspoonful in sugar water; "Cascarine Leprince," one pill at night; "Pastilles Tamar indien" (Grillon or Hell), one-half a pastil at night; purgatin, one knife-point at night (the attendant must be informed that it colors the urine red); syrup of rhamnus catharticus or syrup of figs, one teaspoonful to a dessertspoonful once or twice a day; essence or extract of tamarind, and tincture rhubarb or aromatic tincture rhubarb in the same doses.

When a laxative is to be administered for a short period, the senna preparations are suitable: Aqua laxativa, 2 to 3 teaspoonfuls a day; hydromel infantum, 1 to 2 dessertspoonfuls; compound licorice powder, one knife-point in the morning; castor oil 5 to 10 c.c. ($1\frac{1}{2}$–$2\frac{1}{2}$ fl. dr.) a day in gelatin capsules, or in soup, beerfoam, or black coffee. For systematic enteroclysis, which should be continued for some time and, if possible, administered at the same hour each day, by means of a soft colon tube or catheter, introduced to a distance of 8 cm., about 100 to 200 c.c. of cool water is used for infants, and as much as 300 c.c. for larger children, with or without the addition of common salt, Karlsbad salt, Bitterwasser, oil, or soap. When enteroclysis is kept up for some time, care must

be exercised to avoid producing distention and atony of the rectum by introducing excessive quantities of fluid.

One of the above-mentioned mineral waters may also be employed for the colonic injection, 1 to 6 tablespoonfuls of the bitter water selected, or the same quantity of aqua laxativa, being added to ½ or ¾ L. (quart) of water at room temperature. These colonic injections should be practised daily or three times a week.

In regulating the *diet*, which is always the most important factor in the treatment, it is necessary, first of all, to discover the cause of the constipation. In breast-fed children one must always determine whether the nourishment is sufficient in quantity (constipation simulated by insufficient nourishment), the milk is sufficiently rich in fat, and the nurse is suffering from constipation or menorrhagia. Sometimes the trouble can be corrected merely by prescribing a solution of milk-sugar, but in many cases a change of nurse or, in the case of older children, some other method of feeding must be insisted upon.

In artificially-fed children starchy foods must be excluded from the supplementary diet, and a larger quantity of milk-sugar, malt extract, or cream mixtures rich in fat ordered instead; if necessary, other milk must be substituted. In older children, who take a relatively small quantity of very nutritious food, a so-called ash-producing diet, consisting of green vegetables, light farinaceous foods, and Graham bread, must be added. In the more frequent cases of constipation from overfeeding the number of meals must be regulated and a mixed diet with limitation of the starches instituted.

Diet in Chronic Constipation.—Generally speaking there are three classes of foods that are essential in combating constipation: First, the fats, which are given in the form of rich milk, butter, or rich farinaceous foods; second, the different forms of sugar, honey, sweetened milk, and candy; and third, the vegetable acids, principally in the form of fresh or stewed fruit, jellies, and salads. Combinations of these three factors are readily deduced, such as sweet lemonade, sweet preserves, fresh cider, and the like.

Cold drinks, especially when given on an empty stomach, carbonated waters, and (on account of the ferment-producers which they contain) sour milk and kefir one day old are also valuable.

Strict individualization is indispensable—for many kinds of foods which in some cases are laxative have the opposite effect on other individuals, as, for example, milk, grapes, and the like. Hence, if a certain diet fails to produce the desired effect it must be abandoned at once, because the condition is only made worse if the food remains in the intestine.

Convulsions (*Eclampsia Infantum*).—This term is applied not to a distinct disease, but to functional disturbances of the motor cortex of the brain, due to a variety of causes, occurring especially in nursing infants and even in older children. From the *diagnostic* standpoint it is necessary to distinguish them from those forms of convulsions which are designated symptomatic and bear a clinical relation to some disease of the brain or to passive congestion in the vascular system. The **functional disturbance** is often temporary and always requires for its production a certain congenital or acquired predisposition on the part of the individual. Thus, rachitis appears to be one of the most common predisposing factors. The *direct causes* of convulsions are found in febrile (especially the infectious) affections (the onset of which they frequently signalize, as, for example, apical pneumonia), in diseases of the intestines, overloading of the stomach, alcohol or lead intoxication, and diseases of the kidneys. In many instances the exciting cause of convulsions should be sought in the absorption of pyogenic substances or in auto-infection.

Reflex convulsions after psychic irritation or traumatism also depend on exaggerated reflex irritability of the sensory nerves and incomplete development of the inhibitory centers. Convulsions are especially apt to occur at the beginning of a febrile disease and usually come on suddenly, with pallor of the face and rolling of the eyeballs, with, at first, contraction, later, dilation of the pupils. The head is convulsively overextended and later covered with sweat; the entire body be-

comes rigid; and soon more or less clonic and tonic convulsions make their appearance in the muscles of the face and in the extremities, which become cold and cyanotic. Consciousness is entirely suspended. If the attack is protracted, the face becomes puffy and often deeply cyanosed; the conjunctivæ are injected, and the tongue is often protruded and covered with frothy and bloody saliva. Owing to spasm of the laryngeal muscles and of the diaphragm the child emits short, muffled, cooing sounds.

The onsets may occur with lightning-like rapidity or may be protracted, lasting for days, after which the cyanosis and muscular rigidity gradually disappear, the symptoms subside, and the unconscious child falls into a deep sleep or comes out of the convulsion with a cry. The usual *picture* of an eclamptic attack here described may admit of a number of modifications: There may be no more than pallor of the face, upward rotation of the eyeballs, a brief period of unconsciousness, and localized twitching or convulsions in the facial muscles or in one of the extremities. Eclamptic attacks, as has been mentioned, are particularly apt to occur at the beginning of an acute infectious disease. In other diseases they usually recur after a variable interval, but are not necessarily increased in intensity at each recurrence.

The *prognosis* in a case of convulsions is usually determined by the intensity of the attack and the causal factors. Protracted attacks may, by producing congestive phenomena through spasm of the muscles of the larynx, lead to asphyxia, pulmonary edema, cerebral hemorrhage, or edema of the brain. Hence a guarded prognosis must always be given, as there are no means of judging whether or not the attacks will be repeated, or of determining beforehand the severity of any future attack.

Treatment.—In a given case it is often difficult to discover the cause of the convulsive attack, and the treatment in such a case must, therefore, be purely symptomatic.

The child should be undressed, cool compresses applied to the head, and the bowels emptied by means of an enema or irrigation. If the tongue has fallen back it must be drawn

forward, and, in order to guard against its being bitten, the handle of a spoon wrapped with linen or cotton must be introduced into the mouth. If the breathing stops, artificial respiration and frequently repeated direct insufflation must be instituted at once, plenty of fresh air being supplied, to restore the respiratory movements as quickly as possible.

In many cases protracted warm baths of a temperature of 26° to 27° R. (90.5°–92° F.) with or without cool affusions act favorably (see NEPHRITIS). The sovereign remedy in convulsions is chloral hydrate, given in the form of an enema, with 50 c.c. (1½ fl. oz.) of a mucilaginous mixture, in the dose of 0.25–0.5 to 1 gm. (4 to 8–15 gr.), depending on the child's age. In order to save time it is advisable whenever one is called to see a child who has convulsions to take everything necessary for administering a chloral-hydrate enema. As the solution rapidly decomposes, and as, on the other hand, the crystals are very hygroscopic, a few grams of the substance should be carried in a small bottle, closed with a glass stopper. A syringe (an ordinary one for administering a glycerin enema) with a capacity of 15 c.c. (½ fl. oz.) should be included. First, pure water is injected to induce evacuation of the bowels, after which the desired quantity of chloral hydrate is dissolved in a rapidly prepared decoction of starch (if there is danger in delay, in lukewarm water) and the solution is slowly and cautiously injected—prevented from escaping by holding the anus closed for from five to ten minutes. If, in spite of this precaution, the enema is at once ejected, the same quantity is again introduced. In country practice, especially in grave cases, it would be rarely possible to save the child's life if the drug had to be procured from the nearest drug store and the injection administered by unskilled hands.

If the attack recurs within one-half or one hour after the administration of the first enema, or has not ceased, the same dose is repeated. As soon as the child falls into a deep sleep it should be allowed to rest undisturbed, but should be kept under constant supervision. After thus relieving the symp-

tom, the cause of the attack is to be investigated and the subsequent treatment determined accordingly.

Thus, if it is found that the stomach has been overloaded, or the digestion disturbed in some other way, the stomach must be emptied mechanically, by means of an emetic, or even by lavage; in many cases a drastic calomel purge, in fractional doses, given every half-hour or hour, is successful.

In cases in which the convulsions are produced by a severe intestinal disease, stimulants are indicated.

Those which are described as uremic must be treated by means of baths and suitable diet. In this connection may be mentioned that the examination of the urine must never be neglected.

In the forms described as reflex spasms, removal or correction of the existing cause is indicated—*e. g.*, strangulated hernia, fracture, or a foreign body.

Where convulsions occur apparently without any demonstrable cause, and, therefore, the suspicion of epilepsy is distinctly well founded, they must be treated by a protracted course of bromids; if rachitis, which is so often the predisposing cause, exists, it must also receive appropriate treatment. It need hardly be mentioned that the patient must have absolute mental, as well as bodily, rest after a convulsive attack, and that for some time the greatest caution is required in the matter of diet—depending on the cause of the disease. It cannot be sufficiently emphasized that after the stomach has been overloaded with milk, the latter, in every form, must be absolutely withheld, even in breast-fed children, for at least twelve hours, a mild tea or some similar mixture being substituted (see GASTRO-INTESTINAL DISEASES).

Cornea, Diseases of. See EYE, DISEASES OF.

Coryza. See RHINITIS, ACUTE.

Cough, Night, Periodic. See NIGHT COUGH, PERIODIC.

Couveuses. See INCUBATORS.

Cretinism (*Myxedema; Endemic Cretinism*).—The important points in the diagnosis of this disease are the endemic occurrence, the enlargement of the thyroid gland, and a family history of goiter or cretinism.

Sporadic Cretinism, or Infantile Myxedema.—In these varieties there is complete absence of the thyroid gland, representing

FIG. 19.—Untreated myxedema of a mild grade in a child two years of age.

FIG. 20.—Idiot, two years of age, with macroglossia, nystagmus, strabismus, a low grade of myxedema, aphasia, and abasia.

a congenital defect ("thyreoaplasia"). As it is impossible to determine the absence of the thyroid gland positively by means of palpation, it is important to mention the *clinical*

factors which assist in establishing a positive diagnosis. These include disturbance or arrest of development (nanism), the cretinoid expression of face, depression at the root of the nose, with broadening of this organ, thick and everted lips, enlargement of the tongue, cushions of fat on each side of the neck, umbilical hernia, lordosis, peculiar wrinkled appear-

FIG. 21.—Idiot, two years of age, with macroglossia, nystagmus, strabismus, a low grade of myxedema, aphasia, and abasia.

ance of the skin, the absence of sweat, coldness and cyanosis of the hands and feet, obstinate constipation, shortness of the extremities in proportion to the trunk, abnormal persistence of the cranial sutures and of the fontanels, atrophy of the sexual organs, delayed eruption of the teeth, slowness in learning to stand and walk, and profound disturbances of psychic development. These phenomena manifest themselves

gradually, usually after the first six months of life, and become more and more distinct with advancing years, although the disease varies greatly in degree, and in some cases a fair amount of mental development is observed (see Figs 19–23).

The *treatment*, although often it has but little effect on the mental functions, frequently exerts an astonishingly good

FIG. 22.—Untreated myxedema in a child of eight months: Umbilical hernia and double inguinal hernia cured after the use of thyroid extract.

FIG. 23.—Untreated myxedema: Adult twenty-one years old.

influence on the growth and on the other obstinate symptoms, such as delayed dentition, abnormal skin action, etc.

The various thyroid-gland preparations are of use. Thyreoidinum siccum, thyraden, and iodothyrin are also employed, in doses of 0.05–0.1 to 0.3 gm. ($\frac{3}{4}$–$1\frac{1}{2}$ to $4\frac{1}{2}$ gr. per diem), according to age. The treatment with thyroid extract must be commenced very cautiously. At first one tablet is given

every other day, and later one tablet a day; but if the weekly weighings show too great a loss of body-weight, the remedy must be withdrawn for a time. But it must be kept up for years, sometimes during the patient's entire life.

Croup. See DIPHTHERIA.

Croup, Spasmodic. See LARYNGITIS, ACUTE CATARRHAL.

Croupous Laryngitis. See DIPHTHERIA.

Croupous Pneumonia. See PNEUMONIA, CROUPOUS.

Crusta Lactea.—This term is applied to the well-known form of eczema which often develops in infants during the first weeks of life, but sometimes not until after the infant is several months old. It appears on the cheeks, and may be limited to that region or extend to the forehead and scalp. The condition is especially obstinate in fat children. The *treatment* requires regulation of the diet—restriction of the feedings at the breast if the milk contains too much fat—with other measures the same as for eczema.

Cryptorchidism.—When one or both testicles fail to descend, the organ is found in the inguinal canal or remains within the abdominal cavity. Cryptorchidism is most frequent in debilitated and premature children and during the first years of life. The condition need give no anxiety, except in those cases in which the testicle does not descend at all or its descent is accompanied by hernia, in which case the condition is sometimes more serious not only on account of the hernia itself, but also of the possibility of atrophy of the testicle.

To avoid mistakes, therefore, it is always well to convince oneself that both testicles are in the scrotum.

No *symptoms* are produced, except in older children, who may complain of periodic convulsive pain, beginning in the inguinal region.

When the testicle is permanently arrested in the inguinal canal it is exposed not only to frequent inflammation and atrophy, but also to the danger of becoming the seat of a neoplasm, as experience has shown. For this reason, prophylactic extirpation of the testicle has even been advised by some authorities.

No *treatment* is required beyond daily massage of the inguinal region, the movements being made from above downward. When the descent of the testicle is accompanied by the development of an inguinal hernia, the gland should be forced into the scrotum and a truss applied. Inflammation of the testicle is treated by the application of ice-compresses.

Older children must be forbidden to indulge in violent exercises. Gymnastics and swimming may be permitted with restrictions.

Cyanosis, Congenital. See HEART, DISEASES OF.

Cyclic Albuminuria. See ALBUMINURIA, CYCLIC.

Cystitis (*Catarrh of the Bladder*).—This disease is not so very rare, even in nursing infants, and is practically always secondary. It is probable that factors, such as cold, which are given as the primary causes, merely produce a neurosis of the neck of the bladder, or a predisposition to the disease. Those forms of cystitis, however, which are caused by the internal administration of turpentine or copaiba balsam are unquestionably *primary*.

Among *secondary causes* are foreign bodies or calculi in the bladder, infectious diseases, and in many cases of nursing infants direct or indirect infection with the bacterium coli (colicystitis). The *general symptoms* produced by catarrh of the bladder vary according to the intensity of the disease. In mild cases strangury, sensitiveness to pressure in the region of the bladder, and marked unrest are observed. In grave cases the general disturbances are correspondingly increased: there is remittent, often very high, fever, with frequent vomiting and very frequent, distressing strangury.

The urine is more or less turbid; the reaction is sometimes slightly acid, neutral, or alkaline; in the latter case a fetid odor is emitted.

The evacuation of the bladder is usually attended by evident signs of pain; the urine escapes in drops, and every act of micturition is followed by a period of great restlessness. Examination of the urine should never be neglected in suspicious cases, especially in infants, despite the difficulties of the proceeding.

The sediment contains mucus, pus corpuscles, a few red blood-cells, squamous epithelium, the bacteria of putrefaction, and, especially in the form designated **colicystitis**, the bacterium coli in large numbers.

With the exception of those rare cases in which an ascending catarrh leads to inflammation of the pelvis of the kidney, the *prognosis* of cystitis is usually favorable, though a first attack predisposes to recurrence.

The *treatment* must be directed against the exciting cause. In every case disinfectants must be administered internally or injected into the bladder. When the freshly voided urine is neutral or alkaline, urotropin should be given, in the dose of 0.25 to 0.40 gm. (4–6 gr.), three or four times a day, and the dose gradually increased to 1 to 2 gm. (15–30 gr.) a day. As a rule, this causes a rapid diminution of the bacilli. In severe cases, beside urotropin, salol 0.10–0.20 to 0.50 gm. (1½–3 to 7½ gr.), sodium salicylate or aspirin 0.10–0.25 to 0.50 gm. (1½–4 to 7½ gr.), or benzonaphthol 0.20 to 0.50 gm. (3–7½ gr.), three or four times a day, should be tried.

The treatment must be continued for some time after signs of improvement have made their appearance. In obstinate cases and when there is a great deal of pus, irrigation of the bladder with a carefully disinfected Nélaton catheter must be resorted to, employing the following solutions: 1 or 2 : 1000 of silver nitrate, a ¼ per cent. of lysol, or a weak solution of potassium permanganate, etc.

Warm baths and compresses to the region of the bladder, a bland diet, and a decoction of herb. herniariæ and folia uvæ ursi, equal parts, also form an important part of the

treatment. In grave cases recovery may be delayed for years —not infrequently, however, such cases lead to pyelonephritis and terminate fatally.

Debilitas Vitæ (*Low Vitality; Prematurity*).—This condition is present both in premature children and in children born at term who have not reached their full development, either on account of disease on the part of the mother or some other morbid process during fetal life. Aside from the diminutive size (which is at once apparent) and the small body-weight, which ranges from 1500 to 2000 gm. (3–4 pounds), the most *important feature* is extreme diminution of the body-temperature, which may be reduced to 32° C. (89.6° F.). Accordingly, the body, especially the peripheral portions, feels cold to the touch and has a livid blue color. The skin is wrinkled and covered with lanugo hairs—that of the nose with numerous milia; the cartilages of the nose and ear are soft and flexible, and the nails are imperfectly developed. In addition to these external marks, atelectasis of the lungs and sometimes persistent patulousness of the foramen ovale and ductus Botalli are found. Respiration is shallow and infrequent, and the apex beat and the pulse are feeble. Separation of the umbilical cord is delayed, and sometimes takes place by moist instead of dry gangrene. The child is constantly in a somnolent condition, which is only occasionally interrupted by a short whimpering cry.

Corresponding to the general diminution of vital energy (which shows itself in all the functions of the body), the ability to take food is greatly diminished and feeding is rendered more difficult by the lack of power to suck. This and the diminution of body-heat (which will be further discussed) furnish the most important *indications for treatment.* If it is found possible to bring up the temperature and the general strength, the prospect of keeping such children alive is good; but, even after they have been brought up at the expense of untold care and trouble and much material outlay, they often continue for a long time to be a source of grave apprehension.

In *feeding premature children*, the most successful results are to be obtained from breast milk. In those unfortunate

cases in which breast feeding is impossible, the physician will be forced to resort to artificial feeding with the various mixtures and milk preparations which are discussed in the section on ARTIFICIAL FEEDING.

But whatever method be adopted, serious difficulties often arise in administering the food, because premature children often lack the strength to nurse. In such cases, if it has been determined by weighing before and after feeding that the individual feedings are insufficient, the food must be introduced through the mouth or nose by means of a spoon or a suitable glass vessel or nasal cup, as shown in Fig. 24.

FIG. 24.—Nasal cups (one-third natural size).

If the infant is being fed on the breast, milk may be drawn from the nipple into a spoon, or a breast pump may be used. Illustrations of various forms of breast pumps are shown in Figs. 28–35.

In view of the enfeebled digestive power and the small appetite for food, the quantity of milk for a feeding should at first be small, say from 20 to 40 c.c. (5–10 fl. dr.) every hour, and later every one and one-half or two hours, with intervals of three to four hours during the night.

As already stated above, the second important factor in the rearing of premature or weakly children is to prevent the loss of natural heat and secure a constant supply of artificial heat. After the first warm bath, at 30° R. (99.5° F.), immediately after their birth, these children should not receive another bath, but instead the body should be carefully washed with warm water, one portion at a time. As the pressure of the wrinkled clothing is apt to injure the delicate skin, the child should be wrapped in cotton—this also has the advantage that it saves too-frequent change of linen. In order to maintain the body-heat at a constant level the infant

should be kept in a warm room and, when in bed, surrounded by warm bottles or thermophores, hot stones, or earthenware bottles filled with hot sand. These indications are satisfied most perfectly by employing an incubator (see INCUBATORS). Aside from these aids for keeping premature children alive, stimulants must be used to improve the strength of the heart, as in the case of asphyxia.

Dentition, Difficult.—The theory that dentition itself, or difficult eruption of the teeth, is attended by symptoms important enough to give to the term "difficult dentition" the significance of a clinical entity, has been sufficiently refuted from the pediatric standpoint. In every condition designated as a teething disease it is possible to find some other etiologic factor.

Inflammatory processes do occur in the oral cavity or in the gums during dentition, and these are described in the appropriate sections. But to say that every disease occurring during the period of dentition is caused by that process, although convenient, is not permissible clinically. It follows from what has been said that lancing the gums over the erupting teeth (which is still practised) has no value whatever. [Most American physicians will refuse to accept this dictum. In selected cases, lancing of the gum is followed by immediate relief of pain and sleeplessness. When performed with a sterile knife, rather dull of edge, and the wound bathed with a boric acid solution, at intervals, for twenty-four hours, the operation is without danger.—ED.]. Prophylactically, of course, the oral cavity at all times, and particularly during dentition, requires a certain degree of attention. In extensive hyperemic conditions frequent rinsing of the mouth with cold sterilized or boiled water does a great deal of good. Further discussion will be found in the section devoted to the care of the mouth and teeth. (See MOUTH AND TEETH, CARE OF.)

Dentition. See TEETH, DEVELOPMENT OF.

Dermatitis Exfoliativa Neonatorum.—During the first days after birth, rarely later, the skin becomes intensely reddened and the epidermis peels and rolls off, exposing the cutis in places (Fig. 25). The beginning of the disease is attended by fever, and there is extreme emaciation, which may lead even to atrophy and a fatal termination. In cases in which recovery takes place the erythema subsides and the excoriated cutis becomes covered with new epithelium, which may be cast off and renewed again and again, until finally

FIG. 25.—Dermatitis exfoliativa in a child three weeks old.

the newly-formed layer of epidermis has become sufficiently resistant.

The *causes* of dermatitis exfoliativa should, perhaps, be sought in a septic infection.

The *treatment* consists in brine or oak-bark baths (1 kg. [2 lb.] to a bath) of eight to ten minutes' duration, given twice a day and followed by thorough drying and dusting with a powder consisting of equal parts of zinc oxid and Venetian talcum, or the application of zinc or boric acid ointment, or gauze wrung out of a mixture consisting of equal parts of olive oil and lime water.

In addition to the medicinal treatment the child must be rationally fed, if possible by its mother or a wet nurse.

The disease differs from the grave form of pemphigus by the fact that its *prognosis* is more favorable and that the skin between the areas where the epidermis has been cast off is not in a normal condition, as in pemphigus, but reddened, fissured, or scaly.

Dermatitis, Purulent. See ECTHYMA.

Diabetes Insipidus.—This disease either develops gradually or comes on suddenly, and is *probably due* to psychic disturbances, syphilitic or traumatic diseases of the brain, or heredity; it also occurs without any demonstrable cause.

Diabetes insipidus is *characterized* by the evacuation of excessive quantities of urine, almost as pale as water, and of very low specific gravity (1.001 to 1.005), and correspondingly increased thirst.

As in diabetes mellitus, the extreme dehydration of the blood leads to the production of external changes, such as dryness of the skin and mucous membranes and diminished secretion from the sudorific and salivary glands. The nutrition does not begin to suffer until late in the disease, when the emaciation caused by the defective appetite becomes more and more marked. By diminishing the bodily resistance this emaciation may give rise to a variety of other diseases, which unfavorably affect the outcome of the original trouble.

The *prognosis* is usually unfavorable, the only exception being formed by those cases which rest on a luetic foundation.

Treatment.—Internally, nerve sedatives, such as valerian or bromin, or infusion of ergot, 2 gm. to 100 c.c. (½ dr.–3 fl. oz.), one dessertspoonful at first three times, and later twice, a day, are indicated, while luetic cases require iodin preparations or codein in ascending doses. The diet must not be restricted, nor should any attempt be made to limit the ingestion of fluid to satisfy the increased thirst.

Diabetes Mellitus.—Increase in the percentage of sugar in the urine occurs occasionally in many diseases of the brain and liver; but diabetes mellitus also occurs as an independent

disease in children even during the first year of life, and, in fact, is not so very rare.

The *cause* may be sought in a variety of nervous diseases, injuries to the skull, grave infectious diseases, and exposure to cold. In many cases a hereditary taint is present; not infrequently sugar is found in the urine of a diabetic patient's children before the symptoms of the affection have made their appearance.

The most important *symptoms* consist in the gradual appearance of marked changes in the patient's psychic and physical condition. Children become lazy, ill-tempered, irritable, lose flesh in spite of the fact that they have a ravenous appetite, and sleep badly on account of the enormously increased thirst and consequent frequent and exceedingly copious excretion of urine. The skin is always dry and covered with purpuric spots, often with furuncles; the tongue is dry; the teeth are carious.

The urine is exceedingly pale, of a high specific gravity, sometimes reaching 1.070, and contains sugar, often as much as 6 per cent. or even more. Along with the sugar, acetone or acetic acid is sometimes found and constitutes a grave symptom.

Diabetes mellitus rarely lasts more than a year; as a rule, death is brought on by diabetic coma, preceded by an increase in the characteristic acetone odor of the breath.

The *treatment* of this grave disease consists, as in the case of adults, in reducing as much as possible, or withdrawing, the carbohydrates from the diet, and correspondingly increasing the nitrogenous and fatty substances.

Milk with an excess of cream, coffee, and sour milk, form the principal articles of diet; for older children, meat dishes, soups, eggs, vegetables, and bread containing the smallest percentage of carbohydrates, such as aleuronat- and Kleberbrot (shredded wheat and the like). Saccharin or crystallose must be used for sweetening. (The former is about 300, the latter about 400, times as sweet as sugar; either may be given in doses of 0.05 gm. (¾ gr.) or even 0.1 gm. (1½ gr.) per diem.) The best internal remedies are Karlsbad water, Fowler's solution in drop doses, and sodium salicylate in ascending doses.

Diarrhea, Acute. See ENTERITIS, ACUTE, OF OLDER CHILDREN.

Diarrhea, Chronic. See ENTERITIS, CHRONIC.

Diastasis and Hernia of the Recti Muscles.—Owing to persistence of diastasis of the recti muscles (which is present at birth in a great many cases and is due to deficient or delayed closure of the deep layers of the abdominal wall), attacks sometimes occur in debilitated children or after an exhausting disease with *symptoms* which simulate incarceration.

During violent exercise, particularly running, jumping, or gymnastics, pain, lasting a few seconds or longer sometimes, occurs in the epigastric or umbilical region. There is often extreme pallor, sometimes vomiting or merely belching, and the child instinctively bends over and presses his hands into the pit of the stomach.

The diastasis involves the upper portion of the abdominal wall from the xyphoid process to the umbilicus, but is not necessarily accompanied by an umbilical hernia.

In the cases in which a hernia is present the tumor is somewhat larger than a plum or presents the shape of a ship's keel in the median line, directly above the navel. The skin over the hernia is movable, and the omentum or knuckle of the intestine can be distinctly felt and can be replaced through the sharp-edged margin of the hernial opening.

Treatment.—As soon as the disease is recognized, approximation of the abdominal muscles should be maintained by a suitable binder or an adhesive-plaster dressing. The latter consists of a succession of strips of American elastic adhesive plaster or Beiersdorf's leukoplast, 2 cm. in width, applied in an imbricated fashion (like tiles on a roof) and embracing the entire anterior aspect of the abdomen as far as the diastasis extends. As the muscles grow, the diastasis gradually becomes narrower.

A large hernia of the "linea alba" requires for its cure a radical operation.

Diathesis, Hemorrhagic. See PURPURA.

Diazo-reaction.—A positive diazo-reaction is rare in the absence of typhoid fever. In this disease the intensity of the reaction corresponds to the intensity of the morbid process. In addition to typhoid fever, a positive diazo-reaction also occurs in measles and occasionally in erysipelas. The reaction is also frequently observed in latent tuberculosis during extension of the morbid process (meningitis, miliary tuberculosis).

Ehrlich distinguishes three grades of the reaction:

1. Intense red coloring of the urine with the formation of a dark gray precipitate.
2. Moderate red coloration with gray precipitate.
3. Pale red coloration with gray precipitate.

The reaction is obtained as follows:

Reagent I. consists of sulphanilic acid 5 gm., hydrochloric acid 50 gm., distilled water 1000 c.c.

Reagent II. consists of sodium nitrite 0.5 gm. and distilled water 100 c.c.

In an ordinary test-tube 250 c.c. of Reagent. I. and 6 c.c. of Reagent II. are mixed with an equal quantity of the urine; caustic ammonia is then added until the level of the mixture in the tube is raised about half a finger's breadth (⅛ of the volume). The tube is then shaken, and if a red color develops the reaction is positive.

Dietetics. See FEEDING, ARTIFICIAL, and FEEDING, NATURAL.

Digits, Supernumerary. See POLYDACTYLISM.

Dilatation of Heart. See HEART, DISEASES OF.

Dilatation of Rectum. See CONSTIPATION.

Dilatation of Stomach. See GASTRECTASIS.

Diphtheria (*Membranous Croup*).—This typically contagious, infectious disease is caused by the presence of Löffler's bacillus. At the period of greatest predisposition or, as is also assumed, in the absence of sufficient protective substances in the blood, the Löffler bacilli may multiply and cause diphtheria, the chief *clinical manifestations* being the formation of inflammatory fibrinous exudates and secondary intoxication of the organism.

Infection with the specific cause of diphtheria may take place through any wound in the skin or mucous membrane; but the mucous membrane of the pharynx and of the nose are justly regarded as the most frequent portals of entry. Wherever the bacilli first find a lodging, the irritation of the toxins which they form causes a fibrinous, at first subepithelial, transudation, which leads to necrotic destruction of the epithelium and finally to the formation of the superficial, adherent, diphtheritic false membrane. This primary process may extend laterally from the original site of infection or downward into the tissues, and in the latter case leads to the formation of cup-shaped or superficial gangrenous tissue necrosis.

The diphtheritic toxin elaborated by the Löffler bacillus, reinforced by such other virulent germs as streptococci, staphylococci, and influenza bacilli, which are frequently present, leads to a general infection, to septic diseases, or to some grave metastatic affection of an individual organ.

The *clinical features* of diphtheria can readily be classified according to the degree of severity, which is determined partly by the external visible symptoms and partly by the extent to which the entire organism is involved. It is impossible, however, to give a definite prognosis based on any one of these degrees of intensity, because the disease often passes very rapidly from one degree to another.

Rarely diphtheria begins as a latent disease; most frequently the onset is sudden in the midst of apparently undisturbed health, often with intense fever sometimes followed by convulsions, repeated vomiting, and, in older children, headache and sore throat. On inspection, the mucous mem-

brane of the pharynx is found to be intensely red, and either the tonsils are covered with a veil of exudate or the crypts contain a punctate or striate exudate. Although the presence of the latter may at first lead to confusion with lacunar angina, a mistake which is quite pardonable, the latter disease can be excluded as soon as the exudate on the tonsils becomes confluent and the pillars of the fauces or posterior pharyngeal wall show extension of the exudate, while signs of dysphagia become noticeable.

The transudate, which is at first white and closely adherent, may not spread beyond its original site; or extension takes place, as has been mentioned, either laterally or downward into the tissues, and leads to the production of false membranes in the organs adjoining the oral cavity (nose, larynx); or extensive destruction of the tonsils or of the soft palate may occur.

The swelling of the oral or nasal mucous membrane interferes with speech and gives a snoring sound to the respiration. The odor of the breath is usually fetid from the very beginning, and more or less painful swelling of individual glands in the submaxillary region is observed. Corresponding to the extent of the process, and particularly in cases of mixed infection due to the presence of streptococci, extensive infiltration of the glands and surrounding soft parts takes place, interfering with the mobility of the neck and causing the head to be held rigidly in extension.

After the false membrane ceases to spread it becomes yellowish green or a dirty brownish red from the presence of hemorrhages, and begins to diminish in thickness; a distinct, intensely red zone of demarcation makes its appearance, the membrane rolls up at its edges, and finally separates in friable masses. The separation of a deeply seated membrane often leaves a scar.

If the process is not confined to the pharynx and extends, as it frequently does, to the rhinopharyngeal space, or if, as frequently happens in infants, it begins in the latter, the nasal obstruction and consequent interference with breathing become more and more apparent and a sanguineous fluid is

discharged from one or both nostrils, causing ulceration of the vestibule and of the lip.

Sometimes in extensive diphtheritic disease pseudomembranes are seen in the nasal chambers, and laminated sections of the membrane may be discharged with the secretion. From the rhinopharyngeal space the process occasionally spreads to the auditory canal, and an otitis media develops requiring special attention, just as in the case of scarlet fever (see EAR, DISEASES OF). While extension of the diphtheritic process to the nose is a grave prognostic sign, extension to the larynx and to the deeper air passages has an even more sinister significance. Diphtheria may develop primarily in the larynx just as it does in the nose, and spreading from that organ may represent an ascending process with secondary pharyngeal diphtheria, or a descending process with diphtheritic or croupous bronchitis.

The first *symptoms* of involvement of, or primary disease of, the laryngeal mucous membrane consist in a dry, short, barking cough and a muffled quality of the voice. Although the same symptoms may be due to simple catarrhal disease or to an inflammatory edema of the mucous membrane, they are always of ominous significance and call for the greatest attention and vigilance on the part of the physician. If the laryngeal symptoms increase and there are added signs of embarrassed breathing, which at first may be only audible, but later are also appreciated by the eye, and particularly when the presence of diphtheria elsewhere has been demonstrated, the diagnosis of laryngeal croup should be made. The stenotic breathing becomes louder and louder and leads to prolonged inspiration, followed by a pause and a short and rapid expiration. At first the respirations are but little increased in frequency, but as the stenosis increases the respiration becomes more and more rapid, the cough drier and more atonous, and finally the external, visible signs which complete the clinical picture of acute laryngeal stenosis become more and more alarming.

Owing to the difficult breathing all the auxiliary muscles of respiration are called into play and aspiration phenomena,

such as deep depression of the suprasternal notch and of the supraclavicular fossæ and retraction at the line of insertion of the diaphragm, make their appearance. The child becomes more and more restless and anxious, covered with perspiration, and tosses about in bed, or suddenly starts up and seeks relief by bending the head far backward and clutching some solid object.

The initial pallor gives way to deep cyanosis, especially during the paroxysms of cough with threatening asphyxia.

Auscultation over the lungs, as a rule, reveals only the transmitted murmur of the stenotic breathing; hence any atelectatic or pneumonic infiltration that may be formed secondarily can only be demonstrated by percussion. As these conditions develop, the effects of carbon-dioxid intoxication become more and more distinct and alarming, the child becomes apathetic, sleeping with the eyes half open, the pulse becomes more frequent, breathing shorter and more shallow, and death terminates the horrible picture.

If the above-described symptoms, the gradually increasing severity of which may be designated pathognomonic, do not suffice to establish the diagnosis, the latter may be positively determined by means of the laryngoscope. Unfortunately, however, this examination is usually so difficult under the conditions that it cannot be satisfactorily carried out.

But even if the diagnosis is doubtful, no time should be lost in resorting to operative intervention to relieve the symptoms which threaten the child's life. Until recently the only choice was tracheotomy. Now, since O'Dwyer perfected intubation of the larynx, which marks an epoch in the treatment of acute laryngeal stenosis, we have at our command this bloodless method, which is not difficult of execution in practised hands and should always be preferred in any given case.

Tracheotomy should be restricted to those cases in which the results from intubation are not satisfactory, when the prolonged presence of the intubation tube has produced pressure-necrosis, and whenever after the removal of the tube no improvement is observed in the stenotic phenomena and the

child again develops asphyxia. In these cases inferior tracheotomy is indicated.

Both procedures require the practised skill of the specialist. After intubation the child must be kept under constant supervision to guard against the danger of the tube becoming suddenly plugged by membrane coughed up from the trachea (Fig. 26).

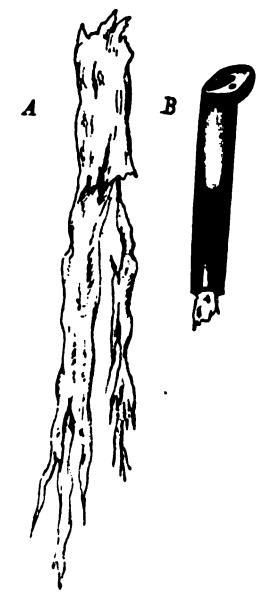


FIG. 26. — A, diphtheritic membrane expelled by coughing; B, tube plugged by diphtheritic membrane.

Aside from these complications due to the localization or spread of the diphtheritic process, the toxin elaborated by the bacilli may produce other effects, such as albuminuria, degeneration of the myocardium, and peripheral palsies. Albuminuria often appears in the first days of the disease, but severe and persistent disease of the kidneys is rare.

From a prognostic point of view disease of the myocardium in the beginning or during the subsequent course of diphtheria is more important. Clinically it manifests itself in the well-known picture of heart-weakness, such as rapid, feeble, and often arhythmic pulse (tachycardia), and after psychic or physical excitement may lead to collapse or sudden death.

As in the case of scarlet fever, the intoxication of the organism manifests itself in disease of the endocardium or pericardium, in gastro-intestinal disease, and in metastatic inflammation of the joints. Palsies not infrequently develop in the wake of a diphtheria. As a rule they occur a few weeks after the termination of the disease, and affect most frequently the soft palate, the muscles of the larynx, occasionally the muscles of the eye, the facial nerve, and the extremities, rarely the auxiliary muscles of respiration and

the diaphragm. The visible signs of the individual palsies depend on the localization of the disease. Thus, palsy of the soft palate is characterized by immobility of the structure during phonation, flaccidity of the uvula causing nasal speech, and the regurgitation of fluids through the nose after attempts at deglutition. Palsies of the laryngeal muscles manifest themselves in disturbances of speech, and in a peculiar, characteristic, hollow, monotonous cough. In this variety of palsy, especially when it is attended by paralysis of the palate, the danger of the food entering the larynx and setting up an inspiration pneumonia must be constantly borne in mind. The extremities may be the seat of paresis or even paralysis, and occasionally exhibit sensory disturbances and diminution of the tendon reflexes.

Palsies of the ocular muscles manifest themselves in disturbances of accommodation and strabismus. In palsies of the thoracic muscles and of the diaphragm there is profound disturbance of respiration, and owing to the deficient respiration which this form produces it represents one of the most dangerous forms of postdiphtheritic paralysis.

In the early stages of diphtheria the question of *diagnosis* is one of the most difficult and most responsible tasks that a physician is called upon to perform.

In spite of large experience and faithful adherence to routine methods of examination, a mistake may be made in the diagnosis and, by delaying the proper treatment, may be of the gravest significance.

The only absolutely certain method of excluding any possible doubt in the diagnosis at the beginning of the disease lies in microscopic examination of a smear preparation or, if necessary, of a bacteriologic culture. [Even when a smear preparation is examined, a culture should be made and examined for confirmation after twelve to twenty-four hours.—Ed.] If time and the necessary facilities are lacking for such an examination, a serum injection always should be made in doubtful cases, because such an injection can do no harm, while, on the other hand, delay is often followed ultimately by the most serious consequences.

The *prognosis* in diphtheria depends upon the intensity which often manifests itself at the very beginning, upon the severity of the epidemic, and upon the age and strength of the patient.

As regards the intensity, cases present a wide variety and may be divided according to severity into septic, toxic, and localized forms. The individual degrees of severity are determined by the virulence of the primary infection and of the secondary or mixed infections, which influence the course of the disease and its concomitant phenomena. Not infrequently relapse occurs a few weeks after recovery from diphtheria; these relapses, however, run a milder course and are never as serious as the primary attack. Occasionally a chronic diphtheria with constantly recurring formation of false membranes is observed; this process may last for weeks, subsiding by slow degrees.

Treatment.—Since the epoch-making discovery of Behring, the treatment of diphtheria and of the cases in which, as has been mentioned, the diagnosis remains in doubt, consists in the administration of a serum injection. When the diagnosis is beyond all doubt, the injection should be given as early as possible; and in doubtful cases, if the symptoms do not subside spontaneously, an injection should be given before the end of the third day. In these days of perfect technic in the preparation of serums the source from which the serum is obtained is quite immaterial, and the question to be decided is not the choice of the serum but the number of antitoxin units to be administered. The latter point must be determined by the outward, visible signs of the disease and the involvement of neighboring organs or of the entire organism. From 1000–1500 to 2000–3000 antitoxin units may be employed. The question whether to repeat the injection depends upon the effect produced by the first. If the temperature does not come down in from twelve to twenty-four hours, or if in the presence of alarming laryngeal symptoms there is not a marked improvement, the injections must be repeated either in the same or in increased strength, and under certain

circumstances even a second repetition after a brief interval may be necessary.

The effect of a serum injection, if administered early, ought to show itself not only in diminution of the fever, the occurrence of a marked improvement in the general condition, and improvement of the appetite, but also locally in demarcation and partial separation of the diphtheritic membrane and a gradual improvement in the concomitant symptoms, such as diminution of the diphtheritic nasal or laryngeal affection and disappearance of glandular swellings. If repeated injections fail to bring about the desired improvement in any one of these ways, it is a sign that the toxic action of the diphtheria or of the mixed infection has exerted its malign influence, which cannot be combated by administering another injection, no matter how large the number of units.

The injection must be administered under strict aseptic precautions. The thighs are usually selected, more rarely the skin of the abdomen. [The back between the shoulder-blades is usually chosen in America, because the operation can be done without the child's seeing it. The needle should be inserted from above downward, so as to prevent loss of some of the serum, by oozing from the puncture-opening.—Ed.] The syringe must be boiled before it is used, or rinsed five times with boiling water and as many times with absolute alcohol. The alcohol that remains in the syringe is removed by flushing it out several times with a ½ per cent. solution of carbolic acid. The needle must also be disinfected with the same care as the syringe. Platiniridium needles are to be preferred, because they can be rendered aseptic by heat.

The skin at the site selected for the injection is cleansed with soap, alcohol, and ether, or a 1 : 1000 solution of bichlorid of mercury; the needle is then inserted into the subcutaneous tissue and the contents of the syringe slowly expelled. Immediately after the injection has been completed, the puncture wound is sealed with a 10 per cent. iodoform plaster or 10 per cent. iodoform-collodion. If swelling and redness of the skin with pain develop at the

site of injection, compresses of a solution of lead acetate or of aluminum acetate are employed.

The serum treatment, which has now become practically universal in diphtheria, has had the salutory effect of restricting the local methods of treatment which were formerly in use. Active or passive rinsing of the mouth or of the nasal passages is now all that needs to be done in a given case. For this purpose either boiled water or a 2 per cent. solution of boric, citric, or salicylic acid, or actol 1 to 49 c.c. (15 gr.–1½ fl. oz.) (of which a teaspoonful is put into a glass of water), hydrogen dioxid, or liquor Burowii (2 tablespoonfuls to a glass of water of either of these latter) may be employed. The spraying should be done two or three times a day with a syringe, irrigator, or spray apparatus, the child bending forward during the procedure. Older children may be made to gargle several times a day with one of the above-mentioned solutions. If the patient vigorously resists these cleansing procedures, it is wise to abandon the attempt and to trust to the serum alone to remove the membranes. In such cases the oral cavity may be at least partially cleansed by giving copious quantities of ice-cold water with or without the addition of fruit juice. The application of cold, whether in the form of ice-cold water, ice pills, or frozen fruits—like the application of ice compresses or the ice-cravat to the throat—exerts a very favorable influence on the accompanying dyspnea and the secondary enlargement of the lymph glands. In addition to cleansing the mouth and nasal cavity, insufflations of various powders may be practised two or three times a day. For this purpose may be recommended dermatol, iodoform, tannoform, and sodium sozoiodolate with equal parts of flowers of sulphur and a little saccharin. When the nasal passages are ulcerated they should be painted with some disinfecting ointment, such as 10 to 20 per cent. of borated vaselin, or 5 to 10 per cent. of dermatol, iodoform, or airol ointment, applied on a thin cotton tampon.

Sometimes, especially in the presence of widespread glandular enlargement, inunctions with mercurial ointment or

Credé's ointment may be necessary in addition to the above-mentioned throat compresses.

In the treatment of primary or secondary laryngeal croup we also depend entirely on serum injections; and if the symptoms increase, the injection occasionally has to be repeated after a short interval with a larger number of immunization units.

If the alarming symptoms fail to subside speedily or attacks of asphyxia come on, intubation, or in some cases tracheotomy, must be resorted to at once to meet the vital indication. But the local treatment must also be duly attended to in the presence of croupous symptoms. It consists chiefly in the continuous inhalation of a mixture consisting of equal parts of lime water and distilled water; a 5 : 200 solution of lactic acid; liquor Burowii, 1 part to 3 of water; or 2 to 3 per cent. solutions of boric, salicylic, or carbolic acid.

To induce sweating the patients should be wrapped in blankets and covered with a rubber sheeting.

Internally stimulants are demanded; and if there is reason to think that the membrane is loosening, or the secretion is not being expelled, expectorants are prescribed, as, for example, the following:

℞ Apomorphin. muriat., 0.01 to 0.03 (gr. $\frac{1}{6}$–$\frac{1}{2}$);
Aquæ dest., 80.0 (f℥iiss);
Liq. ammon. anisat., (gtt. 20).—M.

Sig. One tablespoonful every hour.

Or, infusion of ipecac; or decoction of milkwort with or without ammonia water, spirits of ether, or Bestuscheff's tincture of iron.

If the secretion is copious or the rattle of vibrating membranes can be heard, or if the dyspnea increases and the patient is still fairly vigorous, vomiting may be induced after the patient has been given copious draughts of some warm fluid, either mechanically or by means of an emetic, such as the following:

℞ Antimon. et potass. tartrat., 0.05 to 0.10 (gr. i–iss);
Tinct. gummos., 30.0 (f℥j).—M.

Sig. One-half for the first dose, then one coffeespoonful every ten minutes until the desired effect is produced.

Or,

℞ Vini antimonii, 30.0 (ɪ℥j).

Sig. The same as the preceding.

Or,

℞ Antimon. et potass. tartrat., 0.05 (gr. ¾);
Pulv. radic. ipecacuanh., 1.50 (gr. xxij);
Aquæ dest., 30.0 (f℥j);
Oxymel scill., 15.0 (f℥ss).—M.

Sig. One teaspoonful every ten minutes until an effect has been produced.

Or,

℞ Inf. radic. ipecacuanh., 1.0 to 70.0 (gr. xv–f℥ij).

Sig. The same as the preceding.

Or,

℞ Apomorphin. muriat., 0.02 (gr. $\frac{3}{10}$);
Aquæ destil., 10.0 (f℥iiss).—M.

Sig. Inject one-half to one Pravaz-syringeful.

The most important *complications* caused by the effect of the toxin in diphtheria are disease of the heart muscle and the various palsies. As soon as circulatory disturbances (arhythmia and tachycardia) make their appearance, they must be met by the administration of heart stimulants.

In addition to wine, cognac, black coffee and strong tea, the following may be ordered:

℞ Spirit. æther.,
Liq. ammon. anisat., aa 5.0 (f℥j. ♏xv);
Tinct. strophant., 2.0 (f℥ss).—M.

Sig. Five to ten drops every one-half or one hour.

Or, æther aceticus in drop doses and camphor internally or in the form of a hypodermic injection.

Signs of beginning heart palsy call for the following:

℞ Strychnin. nitrat., 0.1 to 0.02 (gr. $\frac{1}{6}$–$\frac{3}{10}$);
Aquæ destil., 10.0 (f℥iiss).—M.

Sig. Inject one Pravaz-syringeful.

Postdiphtheritic palsies, in which the prognosis is usually favorable, require the application of the constant or faradic current; under suitable conditions the treatment may be supplemented by wet-packs, massage, and gymnastic exercises.

Paralysis of the respiratory muscles and of the diaphragm is a dangerous complication, and, in addition to the almost constant application of electricity, urgently calls for the institution of artificial respiration. Paralysis of the pharynx sometimes requires artificial feeding with the stomach tube 3 or 4 times a day. Internally tincture of nux vomica 10 to 20 drops in decoction of cinchona, 5 to 100 c.c. (75 gr. to 3 fl. oz.), is prescribed, and the paralyzed portions are rubbed daily with an ointment consisting of strychnin sulphate, 1 to 30 gm. (15 gr. to 1 oz.) of lanolin.

The nephritis which sometimes follows diphtheria is not of such grave significance as that occurring in scarlet fever, and merely calls for regulation of the diet and appropriate treatment during the initial period (see NEPHRITIS).

Serum injections in some cases are followed, usually at the end of the first or in the second week, by a rise of temperature, pain in the joints, and disturbance of the general condition; temporary rashes—serum rashes—sometimes occur. The latter are to be regarded as endogenous toxicoses and are distinguished by their polymorphous character, resembling either urticaria or the eruption of measles or scarlet fever; or they may present the picture of erythema exudativum multiforme.

The *treatment* of these cutaneous affections, which may be troublesome for a few days, chiefly on account of the itching, consists in wet-packs, sponging with vinegar-water, or compresses. The swelling which sometimes develops in the joints requires immobilization and the internal administration of aspirin or sodium salicylate.

The question of *prophylaxis* plays an important part in diphtheria. It embraces not only the most painstaking precautions against the spread of the contagion (which is very resistant) by means of clothing, linen, or other articles of every day use, but also the protection of the attendants and all other persons who have been in contact with the patient during the beginning of the disease.

The spread of the disease is prevented by means of the various prophylactic measures which are mentioned in the

section on scarlet fever. In the next place, not only the little patient's brothers and sisters, but also the other members of the family and sick-room attendants, should receive an immunizing injection of 600 to 700 antitoxin units (in the case of infants, 100 antitoxin units) administered with the above-mentioned precautions. As the protection thus afforded lasts at most three weeks, it is wise, if the disease is protracted, to repeat prophylactic injections at the end of that time.

Finally, it should be mentioned that the patients must be kept in well-ventilated rooms, from which all unnecessary furniture, especially rugs, curtains, and upholstered articles, have been removed.

The *diet* in diphtheria does not call for any special precaution. It should be as nutritious as possible, and during the initial period liquid and cool. As soon as the dysphagia diminishes and the appetite improves, the very best diet should be given in order to combat the general depression and weakness, and in most cases alcoholic beverages and heart stimulants are indispensable.

During convalescence, when the patient appears perfectly well and the heart action is undisturbed, he may be allowed to leave the bed at stated periods, and, after he has been given several disinfecting baths, should be dismissed from the sick-room at the end of from four to six weeks. [It seems scarcely necessary to add that under no condition should quarantine be raised until two successive cultures have failed to show the presence of the Klebs-Loeffler bacillus.—ED.] It is obvious that after such a grave disease as diphtheria every article in the sick-room must be subjected to the most thorough disinfection.

Diphtheroid Angina. See ANGINA, DIPHTHEROID.

Diplegia, Spastic. See LITTLE'S DISEASE.

Dislocation of Hip, Congenital. See HIP, CONGENITAL DISLOCATION OF.

Duchenne-Erb Paralysis. See PARALYSIS, PLEXUS.

Duchenne's Paralysis. See PARALYSIS, PSEUDOHYPERTROPHIC.

Duchenne's Pseudohypertrophic Paralysis. See PARALYSIS, PSEUDOHYPERTROPHIC.

Dwarfism. See NANISM.

Dyspepsia of Infants. See GASTRO-INTESTINAL DISEASES OF INFANTS.

Dystrophy, Muscular. See PARALYSIS, PSEUDOHYPERTROPHIC.

Ear, Diseases of.—Young infants are particularly liable to ear troubles, be it inflammation of the external auditory canal, otitis externa, or of the middle ear (otitis media). Sometimes one form of inflammation develops as a complication of the other. In many cases the *diagnosis* cannot be established without an examination with the ear speculum. Although both these diseases are attended by general disturbances, the latter are much more intense in otitis media, and the sequelæ of the condition from a prognostic point much more grave. While the causes of otitis externa are to be found in eczematous diseases of the skin, want of cleanliness, the accumulation of ear-wax, or a scrofulous disposition, otitis media is usually secondary to catarrh of the Eustachian tube, which, in turn, is usually due to infectious catarrh of the nasopharyngeal cavity. This explains the frequent occurrence of middle-ear inflammation in children with ozena, adenoid vegetations, and during and after acute infectious diseases, especially influenza, diphtheria, and measles.

But examination with the speculum, which is often indispensable, is not an easy matter in children, and especially in young infants; as a rule, the external auditory canal must first be carefully cleansed of cerumen, shreds of epidermis,

and crusts. For these reasons the physician is often forced to make the diagnosis without an examination of the ear; hence the most important symptoms of beginning **middle-ear catarrh** will here be mentioned. The disease often begins suddenly with fever; older children usually point to the affected ear and so render the diagnosis easier. In infants the only *symptoms* observed may be loud and persistent crying, convulsions, fever, restlessness, vomiting, green dyspeptic stools, unwillingness to take food or a tendency to interrupt the nursing at frequent intervals, so that the condition is frequently mistaken for wind colic or some affection of that kind. The practised physician, however, recognizes the fact that the ear is involved by the character of the cry, the constant to-and-fro movement of the head, and sometimes by the fact that the child often carries its hand to its head, that it preferably lies on one side of the head and cries violently when it is turned over.

In addition there is often marked sensitiveness to pressure, which is elicited by depressing or compressing the external auditory canal and by touching the mastoid process. A sensitive gland may be found in or behind the ear. The fact that the disease has come on after a fresh attack of coryza or some other condition mentioned in the etiology may also assist in the diagnosis.

After this condition has lasted for several days, either the inflammatory phenomena diminish and the above-mentioned symptoms subside, or spontaneous perforation of the drum-head takes place and the accumulation of sanguineo-serous, mucous, or purulent secretion is evacuated, after which the symptoms become greatly diminished. The sequelæ that may follow purulent otitis media consist principally of disease of the mastoid process, periostitis or caries of the mastoid process, and necrosis of the petrous portion of the temporal bone.

At the very beginning of the first-mentioned complication the skin behind the ear appears swollen, edematous, and reddened, and the affected ear projects more and more from the head (Fig. 27); fluctuation becomes more and more distinct

in the region of the mastoid process, and, unless the pus is evacuated by an incision, spontaneous perforation of the skin takes place with the formation of a fistula and gradual separation of the necrotic pieces of the bone.

Necrosis of the petrous portion of the temporal bone may lead to even graver secondary conditions, such as purulent meningitis, sinus thrombosis, encephalitis, or brain abscess. Otitis externa, and especially otitis media, may cause permanent impairment of hearing or deafness and deaf-mutism.

It is evident, from the complications that have been mentioned, how important any inflammation of the ear may be in childhood, and in view of the very gratifying results that

FIG. 27.—Periostitis and caries of the petrous portion of the temporal bone after otitis media, in a boy three years of age.

are often obtained by treatment, the importance of an *early diagnosis* may be appreciated.

At the beginning of an inflammatory affection of the ear several drops of a 5 to 10 per cent. solution of lukewarm carbolic acid and glycerin should be instilled several times a day, or cotton tampons saturated with dilute aluminum acetate may be introduced into the canal. At the same time Priessnitz compresses are applied to the ear and surrounding parts, or a moist dressing covered with a heavier layer of absorbent gauze saturated with aluminum acetate, and then with Billroth-batiste or gutta percha paper. If the pain is specially severe, a 2 to 4 per cent. solution of cocain or a

solution of menthol and camphor [menthol, camphor, of each 1 gm. (15 gr.), liquid paraffin 30 c.c. (1 fl. oz.)] may be used for the instillations. Others recommend the introduction of a gauze strip saturated with aluminum acetate. This should be introduced with the aural forceps under illumination.

After the purulent discharge has begun it is well to continue the last-mentioned procedure, or the ear may be syringed daily with a 2 per cent. solution of boric acid or a pale red solution of potassium permanganate until the fluid returns clear, after which finely pulverized boric acid is insufflated and a plug of cotton, either dry or covered with powdered boric acid, introduced into the ear. Objections have been raised in various quarters against the indiscriminate use of the ear syringe, especially by laymen, and not without good reason; hence it is much better to resort to syringing only in the presence of an offensive discharge.

If the purulent discharge persists, a mixture of hydrogen dioxid and water, equal parts, is injected several times a day until the fluid ceases to become frothy.

If the pain is intense it may be relieved by instillations of a 2 to 4 per cent. solution of cocain or morphin, or ointments containing these drugs may be rubbed in behind the ear. The affected ear may be covered with Billroth-batiste and a small ice-bag placed over it, or one or two leeches may be applied behind the ear.

An excellent therapeutic effect is obtained by paracentesis of the drumhead, which, if performed at the right time, often prevents the development of the gravest complications.

The *treatment* of the other complications that have been mentioned requires the services of a specialist.

The occurrence of **furuncles** and **abscesses** in the auditory canal should also be mentioned. At first these may give rise to the most violent pain, and are not infrequently caused by slight traumatism inflicted while cleaning the ear or during careless manipulation of the aural speculum or syringe. They usually attract attention by causing redness and swelling of the external auditory canal. As soon as fluctuation

is discovered at any point, the abscess must be opened and a moist dressing saturated with aluminum acetate applied, whereupon the pain and swelling soon subside.

Foreign Bodies in the Auditory Canal.—Children frequently introduce all kinds of objects into the nasal passages or the auditory canal, which may set up an inflammatory affection of those structures. The most important symptoms of such a condition are reflex cough or sneezing, vomiting, hemicrania, dysphagia, and vertigo.

An attempt should first be made to remove the foreign body in the auditory canal by means of forcible syringing with lukewarm water. But if the foreign body is some leguminous vegetable like a lentil or bean, plain water should not be used, because it induces swelling of the foreign body; in such cases glycerin and water in equal parts or 50 per cent. alcohol is used instead. To remove an insect from the auditory canal the instillation of a few drops of oil is resorted to instead of syringing; the insect rises to the surface of the oil and is then easily removed. Some foreign bodies, such as glass beads or small round stones, can be dislodged by inclining the head to one side and shaking it. If the foreign body cannot be removed in this way, the question of instrumental interference may be considered. But in no case should an attempt be made to extract a foreign body without illumination, on account of the great danger of injuring the drumhead.

When the foreign body is concealed by the inflammatory swelling of the external auditory canal and no alarming symptoms are present, it is best to defer its extraction until after the inflammation has subsided.

In the case of restless patients, instrumental interference often requires anesthesia. The hook-shaped probe, sharp hook, or very rarely aural forceps and gimlet-like instruments, are employed. Grave cases may require partial separation of the auricle and possibly chiselling away of the posterior wall of the auditory canal.

Eclampsia Infantum. See CONVULSIONS.

Ecthyma (*Purulent Dermatitis; Pustular Eczema*).—This disease consists of an eruption of large pustules, either discrete or collected in groups, and is often associated with eczema. After the scab has dried and separated, round, punched-out ulcers sometimes remain, and when several of them are close together and coalesce, large areas of skin are often destroyed (see Fig. 28).

Ecthyma ulcers are found chiefly on the nates, the genitalia, the abdomen, and the lower extremities. The cause, aside from the want of cleanliness, is found chiefly in cachectic and marantic conditions, such as result from severe gastro-

FIG. 28.—Child six months old with ecthyma ulcers. Characteristic arthrogryphotic position of the hand.

intestinal disease, measles, and scarlet fever, or as a concomitant of tuberculosis or scrofulosis.

The ulcers are often torpid and heal but slowly, leaving scars. The healing of the ulcers progresses *pari passu* with the improvement in the general condition. If the cachexia increases, the deep ulcers cease to show any peripheral reaction or the slightest tendency to heal, and confirm the *unfavorable prognosis* of the general disease.

The *treatment* of ecthyma is the same as that of ECZEMA (p. 132). In the form known as cachectic ecthyma antiseptic ointments or compresses must be used. Supportive treatment, nourishing diet, and baths are the chief factors in the treatment of this variety.

Eczema.—The terms used to describe the different varieties of this common disease of childhood, such as papular,

vesicular, and pustular (impetiginous) and crustose eczema, which latter may lead to the formation of ecthyma ulcers, and the names of the milder forms, eczema rubrum and squamosum, indicate the kind and degree of the exudation. The disease does not spare even the youngest children, and may be either acute or chronic; in the latter case it often relapses and lasts for years. The *exciting causes* of eczema are manifold. The disease may be produced secondarily by the presence of some other skin disease or parasite, and the itching to which they give rise; or the cause may be sought in excessive warmth of the clothing, pollution by feces, urine, or the secretions from suppurating wounds, various kinds of wound dressings, or insufficient drying after the bath, especially a bath containing salt.

Among the endogenous *causes* constitutional conditions, such as rachitis, scrofulosis, excessive feeding, chronic constipation, and other digestive disturbances, may be enumerated. The most important concomitant symptoms of eczema are itching, which is increased by warmth, and swelling of the neighboring lymph glands. Eczema may occur in any portion of the skin, and under aggravating circumstances may spread over the entire body.

The *treatment* of eczema is as tedious as it is thankless. Above all the presence of some etiologic factor must be sought for, as its removal is often followed by disappearance of the eczema without any further treatment.

Any existing digestive disturbances must first receive proper attention. They must be corrected either by changing the diet, by excluding starches, by administering mild laxatives and intestinal disinfectants, such as ichthalbin, resorcin, creosote, or by prescribing a drinking-cure with Karlsbad or Vichy water. In chronic cases Fowler's solution or some arsenical water, and possibly even thyroid gland substance in pastils or tabloids, may be administered.

The *local treatment* of eczema must be determined by the nature of the disease. In the forms characterized by the formation of scales and crusts, such as are found on the hairy scalp and on the face, an attempt must be made to soften the

crusts by the application of an emollient compress wrung out of a ½ to 1 per cent. solution of resorcin or salicylic acid, or 2 per cent. boric acid, or aluminum acetate, or by rubbing the crusts with oil, or applying oil cataplasms covered with Billroth-batiste or gutta percha paper until they can be easily removed either mechanically or by washing the parts with soap and water. After removal of the crusts, the red and inflamed skin beneath is treated two or three times a day with Lassar's zinc paste, Wilson's ointment, or ointments containing zinci oxid., 1.0 (gr. xv); hydrarg. præcip. alb., 0.10 to 0.50 (gr. iss–viiss); axung. porci, 10.0 (℥iiss); ol. olivar. dulc., 1.0 (gr. xv): or zinci oxid., acid. boric., āā 1 to 2.0 (gr. xv–xxx); lanolin, 15.0 (℥ss); ol. olivar., 5.0 (℥j gr. xv), glycerin, 3.0 (♏xlv): or naftalan and adip. lanæ, āā, or β-naphthol, 0.10 to 2.0 (gr. iss–xxx); pulv. amyli, 10.0 (℥iiss); adipis, 30.0 (℥j): or thigenol, 10.0 (℥iiss); vaselin, lanolin, āā 20.0 (℥v): or a 2 to 10 per cent. lenigallol ointment mixed with zinc paste: or a 2 to 5 per cent. xeroform ointment with ungt. simpl.: or dermosal: and to prevent the ointment from being rubbed off, the parts are dusted with a dusting powder. In order to give the ointments time to act, the head is sometimes bandaged; in eczema of the face, a suitable mask of linen is used, and when the disease involves other portions of the body, the parts are covered with pieces of linen smeared with the ointment and protected by a layer of cotton held in place with a roller bandage.

Ulcerative eczematous conditions of the skin usually require treatment with one of the above-mentioned lotions, and not until the ulcers have healed should the treatment with ointments be begun (see ECTHYMA).

In dry and in chronic eczema, after all signs of acute inflammation have disappeared, tar preparations are indicated, but during their use the general condition of the child must be carefully looked after to prevent intoxication, which is heralded by a greenish discoloration of the urine. One of the best tar preparations is Wilkinson's ointment, which is very well borne. Or one of the following may be tried: Ol. cadini, ol. olivar., of each 4 gm. (1 dr.), lanolin 40 gm. (10 dr.); tinctura rusci; tinctura lithantracis Leistikow; and 5 to 20

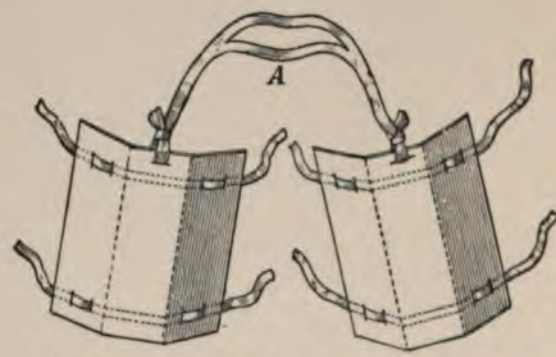


FIG. 29.—Model for the dressing shown in Fig. 30. The opening in the calico strip *A* is for the head, so as to prevent slipping of the pasteboard splints.

per cent. ointments and pastes containing ol. fagi, ol. rusci, ol. lithantracis; or a 10 per cent. solution of ol. Liantrali in

FIG. 30.—Dressing to prevent scratching in eczema of the head.

olive oil. Tar may also be replaced by one of the various naptha preparations: Naftalan, petrosapol, sapolan, and empyroform. Owing to the soap they contain they have a

softening action, and are therefore indicated whenever the skin is greatly thickened.

The question whether to permit bathing and washing in eczema must be answered according to the conditions in the individual case; if the daily use of water is found to make the condition worse, it must be abandoned. But in order not to neglect the care of the skin altogether, the body must be partially washed with lukewarm boiled water, and at least one full bath given every week. To the latter a decoction of oakbark may be advantageously added.

FIG. 31.—Congenital elephantiasis and partial gigantism (of the feet) in an infant ten months old.

To prevent children suffering from eczema from scratching, which makes the disease worse and causes it to spread, either the hands must be wrapped with cloths or the forearms incased in pasteboard splints, which make scratching impossible without interfering with movements of the arms (see Figs. 29, 30). In every form of eczema the hands must be kept scrupulously clean and the finger-nails trimmed at short intervals.

It should also be mentioned that exposure to red light exerts a very favorable influence on many forms of eczema.

Eczema Intertrigo. See INTERTRIGO.

Eczema, Pustular. See ECTHYMA.

Elephantiasis, Congenital.—This name is applied to a

variety of morbid processes which usually have only a superficial resemblance to true elephantiasis congenita. In most cases, as in the one shown in the illustration (Fig. 31), the condition is a true neoplasm (angioma, lymphangioma, lipoma, neuroma, or fibroma); in many others it is the result of some congenital disturbance of the circulation (occlusion by bands of amniotic tissue; see, also, GIANTISM).

Emesis. See VOMITING.

Emphysema.—With the exception of congenital cases, this disease, which occasionally occurs in childhood, chiefly in the form of vesicular emphysema, must be referred to interference with the respiration from some disease of the respiratory organs, such as whooping-cough, laryngeal stenosis, chronic bronchitis, goiter, or asthma. But owing to the elasticity of the thorax, emphysema in childhood does not become so extensive, nor is it followed by complications of the same gravity as in the case of adults.

Symptoms.—Aside from the dyspnea, the signs in a case of extensive emphysema consist in dilatation of the thorax, angulation of the sternum, and characteristic deformity of the thorax corresponding to the enlargement of the boundaries of the lungs. The outlines of the cardiac dulness are also materially diminished; and the diaphragm remains practically fixed in the inspiratory position. As a result the liver is forced into an abnormally low position, a point that must not be overlooked in the diagnosis.

Percussion usually elicits hyperresonance, the sound extending beyond the physiologic borders of the lungs. On auscultation, diminished vesicular breathing with sibilant râles and coarse mucous râles is heard over the entire lower portions of the lungs.

In the case of extensive emphysema of some standing, accentuation of the second pulmonary sound is present, with marked symptoms of dyspnea and asthmatic attacks, especially after forced movements, such as running, leaping, gymnastic exercise, and going upstairs.

The *prognosis* of emphysema is in the main favorable, since the disease subsides with the cessation of the etiologic factors.

Treatment must be directed chiefly against the causes of the disease. If any changes in the pulmonary parenchyma remain, the appropriate treatment (above all, lung gymnastics, consisting in slow and deep inspiration and expiration) must be instituted. In addition, change of air, especially removal to a moutainous climate at an elevation of 1000 meters or more, and, if possible, a course of treatment in the pneumatic chamber (Diana-Bad in Vienna or Reichenhall and Ems) are also to be considered.

Gerhardt's method of compression may also be recommended. The object of this procedure is to increase the length of expiration and render it more complete by instructing the patient to compress the thorax with his hands after taking a deep inspiration. This form of pulmonary gymnastics should be performed twice a day for from ten to fifteen minutes.

In most cases no result at all is to be expected from internal remedies. In case of disturbance of the cardiac compensation, catarrh of the respiratory organs, or secondary anemia, the patient must be subjected to symptomatic treatment with digitalis, strophanthus, stimulants or expectorants, or iron preparations. It is most important to guard against a fresh attack of acute bronchial catarrh by insisting on hygienic and regimenal measures to harden the body.

Encephalitis, Acute (*Brain Abscess*).—This is almost always the result of metastasis and may be due to any one of the causes that are given for SINUS-THROMBOSIS (*vide*). In childhood the symptoms of brain abscess are usually the same as the symptoms of acute meningitis, and except in those cases in which the abscess develops from purulent otitis media or from some other infectious or septic disease, giving rise to head symptoms and high fever and causing hemiplegia, the possibility that a brain abscess of any extent is developing would hardly be thought of.

Although the disease is to be regarded as one of extreme gravity, if only on account of the severe conditions that produce it, it is nevertheless true that smaller abscesses may heal or porencephalic cavities may result, with secondary palsies and other nervous phenomena, which will be discussed under the appropriate heading.

In cases of purulent otitis media with or without involvement of the mastoid, surgical intervention is indicated, and under certain circumstances may result in recovery after opening the neighboring abscess cavity.

Encephalitis, Acute Hemorrhagic.—This disease develops after various infectious diseases; that is, as a result of infection or possibly metastasis; or it may occur as a primary disease in newborn infants. The lesions consist of disseminated inflammatory foci of a hemorrhagic character, or accumulations of fat granules, leukocytes, and degenerated nerve fibers. Clinically, it presents the picture of an acute meningitis with great acceleration of the pulse and elevation of temperature, frequent respiration, rigidity of the neck, and coma, and either terminates rapidly in death or, if the course is prolonged, leads to partial paralysis, in which latter case recovery may occasionally take place. The management is the same as that of a case of acute meningitis: Rest, ice to the head, and laxatives to relieve the congestion, especially calomel, in suitable doses, given every one or two hours. In chronic cases warm baths, administered once or twice a day and followed by wet packs, sometimes exert a favorable influence on the course of the disease.

Encephalocele. See MENINGOCELE.

Endemic Cretinism. See CRETINISM.

Endocarditis. See HEART, DISEASES OF.

Enteralgia. See COLIC.

Enteric Fever. See TYPHOID FEVER.

Enteritis. See GASTRO-INTESTINAL DISEASES OF INFANTS.

Enteritis, Acute, of Children.—The pathologic changes in this disease may involve the entire mucous membrane of the small intestine or only that of the duodenum and jejunum, and are the same as those described in part in the section on Enteritis in Infants. (See GASTRO-INTESTINAL DISEASES OF INFANTS.) Hyperemic swelling of Peyer's patches and the secretion of mucus are the most important features, to which may be superadded parenchymatous changes in the liver, spleen, and kidneys.

The *cause* of enteritis is usually found in some grave disturbance of digestion and the presence of various bacteria (especially the bacterium lactis aërogenes and bacterium coli), whose toxins cause disease of the intestinal mucous membrane and later produce a toxic infection of the entire organism.

The disease occurs either primarily or in many cases associated with catarrh of the stomach. In the latter case gastric *symptoms*, such as nausea and vomiting, are more prominent; in the former the clinical picture is limited to the intestinal phenomena. The latter manifest themselves in the form of frequent stools, at first mixed with fecal particles and later liquid and of a yellowish or greenish color, and sour or fetid odor, mixed with more or less mucus. Before every evacuation of the bowels the patient becomes restless from a preliminary attack of colic, and evacuation is attended with the copious discharge of flatus. The abdomen, in the region of the small intestine, is distended and is sensitive to pressure. Appetite is lost, thirst is increased, the urine is diminished in quantity and sometimes contains albumin. The disease begins with high fever, which sometimes persists throughout its course; owing to the secondary intoxication the child is drowsy and stuporous, and in many cases convulsive twitchings or spasms occur.

The irritation of the alvine discharges causes intertrigo or eczema of the skin and mucous membrane in the anal cleft, which adds to the patient's suffering.

The *prognosis* of enteritis in older children is usually favorable, if appropriate medicinal and dietetic treatment is begun in time.

Treatment.—The same indications for the absolute withdrawal of food exist as are discussed in connection with acute gastric catarrh (see GASTRO-INTESTINAL DISEASES OF CHILDREN). For beverages, cold tea, albumin or rice water, or a cold decoction of salep 4 gm. to 160 c.c. (1 dr. to 5 fl. oz.), and in older children, water with huckleberry wine, or a Dalmatian or Italian wine, and thickened (mucilaginous) beef-broth, made without greens. When the appetite reasserts itself, cocoa or Michaelis Eichelkakao, stirred up with water and brought to a boil, may be given in addition. Boiled milk may now gradually be added, and as the stools become more consistent and less frequent, scraped meat, zwieback, or toast.

For internal administration all the preparations suitable in acute enteritis of infants may be mentioned (see GASTRO-INTESTINAL DISEASES OF INFANTS), and as the children are older the doses must be increased accordingly.

On account of the colicky pains it is well to add to the various preparations an opium preparation or other narcotic in a suitable dose, adapted to the child's age.

The fever and colic should always be combated with wet packs. The diet as well as the medicinal treatment must be kept up for some time after obvious signs of improvement have made their appearance. (See the sections on CHOLERA INFANTUM and GASTRO-INTESTINAL DISEASES OF INFANTS.)

Enteritis, Chronic (*Chronic Diarrhea*), in most cases is the result of an antecedent acute enteritis, or represents one of the most important concomitants of rachitic or tuberculous disease.

The *pathology* of the disease is identical with that of chronic catarrh of infancy; important features are atrophic

thinning of the intestinal walls and the swelling of the solitary follicles and Peyer's patches, and hyperplasia of the mesenteric and peripheral lymph glands.

The *clinical picture* of the disease is dominated by the characteristic appearance and increased number of the stools, and by the progressive emaciation. The stools are increased in number, offensive, watery and mucoid, and either greenish or gray in color, and contain remnants of undigested food which often are fetid in odor. The abdomen is distended and the overlying skin attenuated and marked with a network of veins; on palpation the dilated lymphatic cords and lymph nodes can be felt through the skin. The distended loops of intestine are distinctly visible and peristalsis is diminished or entirely abolished. At first the appetite is increased, later it gradually declines and the child may refuse all food. Thirst is increased, the urine is diminished in quantity and sometimes contains albumin. The liver and spleen are usually enlarged. The atrophic, wrinkled skin presents, in addition to the familiar intertriginous eruptions, hemorrhages, furuncles, or ulcers, with partial necrosis of the skin (ecthyma). In the severer cases death results from some complication in the lungs or in the meninges after the development of edema in various portions of the body.

Treatment.—As in the case of other diseases of the intestine, which are discussed elsewhere, so also in chronic enteritis, regulation of the diet and its adaption to the child's age is one of the most important indications. In many cases milk must be withheld altogether; or an attempt may be made to give it diluted with cocoa, coffee, calves'-foot soup, rice porridge, or a decoction of salep. (See ENTERITIS, ACUTE.)

If the digestive power is partially retained, small pills of scraped raw beef rubbed up with claret are useful; or scraped and slightly boiled beef, the various meat juices, such as Puro, Valentine's meat juice, Wellcome's wine of beef and iron, Brandes' or Baker's essence of beef, or freshly expressed meat juice may be given.

In the first stages of the disease good results are often obtained from a course of Karlsbad or Vichy water. (See

CHRONIC GASTRIC CATARRH, under GASTRO-INTESTINAL DISEASES OF LATER CHILDHOOD.

Internally, disinfectants are indicated, such as salol, benzonaphthol, creosote, guaiacol preparations, and astringent remedies, such as bismuth, tannin preparations, especially tannigen, tannalbin, honthin and tannoform, or a decoction of colombo or hematoxylin 5 gm. to 80 or 100 c.c. (75 gr. to 2½ or 3 fl. oz.) with the addition of 1 to 2 gm. (15–30 gr.) of sodium salicylate; or protargol 0.05–0.10 gm. to 50 c.c. (about 1–2 gr. to 2 fl. oz.); or thiocol 0.50 gm. (7½ gr.), distilled water 50 c.c. (1½ fl. oz.), with syrup of bitter orange 10 c.c. (2½ fl. dr.), 1 dessertspoonful every hour or two. Ichthalbin may be given in the dose of 0.5 gm. (8 gr.), three times a day, before meals, after the third year.

Owing to the cutaneous eruptions which accompany or follow this disease, warm baths at frequent intervals are indicated, and if the child is debilitated the bath should be made stimulating by the addition of mustard flour or spirits of mustard.

During convalescence, wine of quinin and iron and Fellows' or Egger's syrup of hypophosphites are suitable tonics. Good results are observed after a sojourn in the mountains or at the seashore. (See ATROPHY.)

Enteritis, Follicular (*Catarrh of the Large Intestine*). See GASTRO-INTESTINAL DISEASES OF INFANTS.

Enteritis, Membranous. See GASTRO-INTESTINAL DISEASES OF INFANTS.

Enteritis of Infants. See GASTRO-INTESTINAL DISEASES OF INFANTS.

Enterocolitis. See GASTRO-INTESTINAL DISEASES OF INFANTS.

Enterocolitis, Acute Catarrhal. See CHOLERA INFANTUM.

Enuresis Diurna and Nocturna (*Bedwetting.*)—This distressing and often tedious condition either is due to weakness of the bladder itself or is a symptom of a general neurosis, particularly hysteria, which is so common in children. In the latter case the enuresis is usually nocturnal. In many children the *cause* of enuresis is found in weakness of the sphincters, the sphincter vesicæ and the compressor urethræ.

In many cases other etiologic factors are present, such as heredity, anemia, psychic excitement, especially during the school-going age, false modesty and bodily weakness after some severe illness, particularly an infectious disease, and possibly, also, exposure to cold. Enuresis may also be a reflex symptom due to various conditions, such as rhagades or fissures of the rectum, intestinal parasites (oxyuris vermicularis, ascarides), diseases of the genital organs, as phimosis, balanitis, or vulvovaginitis; or the condition may occur in association with renal and vesical calculi or cystitis. In a number of cases interference with nasal respiration by adenoid vegetations has not without reason been given as the cause of nocturnal enuresis.

As a result of any one of these internal or external causes the desire to urinate is sometimes so imperative that the bladder is emptied before natural or acquired inhibition can be brought into play.

In children who are mentally normal the *prognosis* of enuresis is usually favorable, although the disease may for a long time defy every conceivable method of treatment.

It is needless to say that in every case the urine must be examined, so as not to overlook cystitis, chronic nephritis, or diabetes—diseases that regularly announce themselves by enuresis.

Treatment.—In the first place any morbid conditions, such as the presence of intestinal parasites, phimosis, adenoid vegetations and the like, which may be capable of exerting a reflex effect on the bladder, must be removed.

The physician must also satisfy himself that the condition is not due to lack of training—in other words, is not merely a bad habit. The child must not be allowed to drink for three

hours before going to bed nor during the night, and should be induced to pass water immediately before going to sleep and waked for the same purpose one or two hours later. These simple precautions are often quite sufficient to cure the child of its bad habit in a week or two.

The treatment meets with the greatest difficulties in children with a neuropathic taint, in whom all therapeutic measures may fail so long as the general nutrition is not materially improved.

In order to improve the morbid excitability, which usually manifests itself also in nocturnal terror and other signs of nervous irritability, a systematic course of hydrotherapeutics, consisting of half-baths followed by cool affusions to the loins, or a wet pack at night followed by friction, should be tried.

In addition to these therapeutic procedures due attention must be paid to the question of exercise in the open air, gymnastics, swimming, and the like, and to the avoidance of psychic or mental excitement. In this connection the absolute uselessness of corporal punishment and the favorable effect of isolating the patient from his companions should be pointed out. It is found in many cases that if the child is quiet during the day its sleep at night will be less disturbed by dreams such as cause enuresis.

In cases in which the nervous factor is less prominent an attempt should be made to relieve the pressure of the accumulated urine on the neck of the bladder by position—that is, by raising the foot of the bed to elevate the pelvis and keep the head low. Sometimes the irritability of the neck of the bladder can be relieved by daily catheterization or by leaving a urethral sound in place for some time.

Bimanual massage of the neck of the bladder with the finger of one hand in the rectum, which was recently recommended by Thure-Brandt, often has a good effect. The child is placed in the dorsal or knee-elbow position; one finger is introduced into the rectum and pressure is made against it with the other hand applied above the symphysis: this manipulation is kept up for four or five minutes.

Electric treatment has been much recommended; although it is probable that psychic influence plays a very important part in producing the result. Kostler recommends the following method: After the patient has urinated he lies down on a sofa and the anode (positive pole) of the faradic current, armed with a moderately large electrode, is applied to the skin of the abdomen above the pubes, while the bare wire of the cathode (negative pole), after being thoroughly cleansed with a 5 per cent. solution of carbolic acid, is introduced a distance of 1 to 1.5 centimeters into the urethra. After the secondary coil in the sliding apparatus has been removed as far as possible from the primary, or, in other words, the iron nucleus has been suitably placed, the current is closed. The secondary coil (or iron nucleus) is then gradually displaced until a high current is obtained, which is allowed to act for from two to three minutes; the current is then gradually reduced to the extreme minimum, at which it is allowed to act for 1 minute, after which the current is again allowed to increase. The entire séance consists in three repetitions of this gradual increase and reduction of the current. Sometimes the first sitting suffices to effect a cure, but, if necessary, one or more sittings must be given at intervals of a few days. Recently epidural injections of 1 cubic centimeter of a ½ per cent. cocain or a physiologic salt solution have been recommended.

Internally belladonna and strychnin are recommended. The former may also be given in a suppository of extract of belladonna, 0.005 to 0.01 gm. ($\frac{1}{12}$–$\frac{1}{7}$ gr.) each, and the latter in the form of strychnin nitrate 0.002 gm. ($\frac{1}{33}$ gr.) in solution, given at night.

A very popular remedy is the American extract of rhus aromaticus, of which 10 to 15 or 20 drops in sweetened water may be given two or three times a day for a considerable period at a time. By way of experiment the extract may also be given with equal parts of tincture of nux vomica and tincture of cinchona, 10 to 20 drops, in the evening before going to bed. Weak and sickly children should also receive iron or quinin preparations.

Epilepsy.—Superficially the clinical picture of this disease does not differ materially from that of convulsions, which has been described. There is an important difference, however, in that convulsions are merely a symptom-complex, while epilepsy must be regarded as a disease.

The *pathologic findings* in epilepsy are usually negative, except in those cases in which cerebral changes in the cortex are found (cortical or Jacksonian epilepsy). In most cases the disease is hereditary; while all other psychic, purely nervous, or hysterical conditions, especially alcoholism or syphilis in the parents, also play an important part.

Finally, reflex epilepsy must be mentioned; that is to say, the form in which the convulsions are due to the presence of neoplasms on nerves, pressure on nerves (glandular tumors), scars, foreign bodies in the ear, etc., phimosis, swelling of the turbinates, cryptorchidism, and the like.

Symptoms.—The epileptic attacks themselves, which are sometimes observed even in infants, present considerable variations. The attack may be complete or incomplete. The former is usually preceded by an aura, which manifests itself in a great variety of psychic or psychomotor phenomena; but in very young children these may be entirely overlooked. The attack begins suddenly with a loud cry; the child at once becomes unconscious and goes into convulsions, which are first tonic and then clonic. The convulsions may be general or may affect only one side of the body. The pupils are dilated.

The attack, which varies considerably in length, but is usually quite short, is followed by profuse sweating and profound stupor, after which the patient falls into a deep sleep, and when he wakes several hours later, he exhibits every mark of great fatigue and remembers nothing of the attack.

These attacks, to which the term "grand mal" has been applied, differ from the incomplete attacks or attacks of so-called "petit mal," which frequently manifest themselves merely in a brief interval of unconsciousness sometimes lasting only a few seconds, or in attacks of vertigo with or without convulsions. The secondary phenomena in this milder

form of the disease are correspondingly less marked, so that the general health is practically unaffected. Nevertheless these milder forms may under certain circumstances, especially at certain ages, or as the result of other external or internal stimuli, such as fright, onanism, or constipation—that is, through some reflex influence—be replaced by a severe epileptic attack.

After epilepsy either of the mild or of the severe type has existed for some years, marked motor and psychic changes gradually make their appearance. These consist in a certain awkwardness in manual movements and in speech, and in psychic disturbances that may go on to idiocy. On the other hand, there are epileptics who exhibit great mental powers.

The *prognosis* in a clinically well-pronounced case of epilepsy is always doubtful and complete recovery is very rare.

The *treatment* consists in the continued exhibition of bromids, which frequently serve to limit the number and diminish the severity of the attacks.

The treatment must be kept up for a very long time, months and even years. Depending on the child's age, from 0.25 to 0.50 gm. (4–8 gr.) of sodium bromid are given three or four times a day; or Erlenmeyer's mixture (sodium bromid, potassium bromid, equal parts, ammonium bromid as many decigrams as there are grams of the first two ingredients), in dose of 2 to 3 gm. (31–48 gr.) daily, dissolved in water; or the various effervescent bromid preparations may be given. Recently bromipin has been recommended (bromipin 10 per cent., a teaspoonful two to three times a day); but no details have as yet been reported in regard to the effects of the drug in children. When the dose of bromid begins to lose its effect it must be gradually increased; but in giving bromids it is important to see that the remedy is always given immediately before or after a meal, and in order to guard against bromid eruptions as much as possible, the child should take a bath several times a week. It is well to combine Fowler's solution with the bromids, beginning with a small dose and going up gradually to 12 drops a day, as the drug prevents certain unpleasant effects of the bromid treatment, such as

muscular weaknesss and psychic depression. When the attacks are severe and occur at frequent intervals, morphin, opium, or chloral hydrate must be employed. Cerebrin tablets (Pöhl), each containing from 0.30 to 2 gm. (4½–30 gr.), may also be tried; a tablet is given on an empty stomach every two or three days.

Owing to the danger of auto-intoxication the bowels must be kept active, hence an epileptic's diet must be carefully regulated. It should be perfectly bland and consist as much as possible of vegetables. Alcoholic beverages as well as coffee and tea must be forbidden.

The patients must have careful training and must avoid mental as well as bodily overexertion; hence they should not be allowed to take part in athletic games of any kind. In cortical and reflex epilepsy a cure has occasionally been effected by operative intervention; and in every case, therefore, the entire body must be subjected to rigorous scrutiny in order, if possible, to discover some of the above-mentioned causes.

FIG. 32.—Hypospadias.

Epispadias; Hypospadias.—These congenital defects represent malformations of the urinary organs, in which, owing to incomplete closure of the embryonal genital groove, the opening of the urethra is found on the upper surface of the penis (epispadias), or, in the case of hypospadias, on the lower aspect of the organ (Fig. 32). Either epispadias or hypospadias may be associated with other malformations of the genito-urinary organs, which can only be corrected by plastic operation after the child has reached a certain age.

Epistaxis.—Nosebleed in childhood may be due to a variety of *causes*, the most frequent of which are infectious diseases, such as measles, [typhoid and] scarlet fever, and

especially whooping-cough, anemia, leukemia, [mitral obstruction], and scorbutus. In rare cases vicarious epistaxis is observed instead of menstruation. In addition to these general causes, epistaxis may be a *symptom* of local disease of the nose, adenoid vegetations, [diphtheria], eczema, traumatism, or foreign bodies.

Treatment.—In severe cases anterior and posterior packing of the nasal cavities becomes necessary; but in many cases the hemorrhage can be controlled by introducing into the bleeding nostril a cotton tampon saturated with chlorid of iron and wrapped with dermatol gauze. Externally, cold compresses are applied to the forehead and to the nape of the neck, the head being kept moderately high.

Cases of habitual epistaxis call for a rhinologic examination, as dilated vessels or changes in the cartilaginous or bony framework of the nose may cause hemorrhage. In cases of mild hemorrhage the introduction of a few drops of adrenalin solution, repeated at intervals, is recommended (solut. adrenalin 1 : 1000—1 part of the solution to 9 parts of water).

A number of cases have been reported in which good results are said to have been obtained by the internal administration of a 2 per cent. solution of gelatin, 1 dessertspoonful to 2 tablespoonfuls every one or two hours; or gelatin enemas of 50 to 100 c.c. (1½–3 fl. oz.) of the same strength of solution. In severe cases hypodermic injections of 15–20 to 30 c.c. (½–1 fl. oz.) of a 2 per cent. solution of gelatin in physiologic salt solution must be resorted to.

The secondary anemia which follows a severe hemorrhage from the nose requires the appropriate treatment with iron and arsenic preparations and a change of air.

Erb's Paralysis. See PARALYSIS.

Erysipelas (*St. Anthony's Fire*).—Erysipelas is due to infection with the streptococcus erysipelatis, which may gain entrance through the most minute injury of the skin. In newborn infants the seats of predilection for the beginning

of the infection are the navel, the circumcision-wound, and injuries of the head in forceps deliveries; in older children vaccination-wounds, not infrequently the small wounds produced by perforating the lobes of the ears, and, finally, excoriations about the nostrils. The disease is characterized by redness and swelling of the skin, with high fever, and a tendency of the inflammatory process to spread. The process often recurs after it has been arrested. After the disease has run its course the skin undergoes lamellar desquamation.

The *prognosis* depends upon the extent of the disease and the child's age; in infants it is usually fatal.

Relapsing erysipelas is sometimes observed in older children with chronic ozena, in whom the disease begins in the crust-covered alæ of the nose, extending in both directions, and framing the face in an outline resembling the wings of a butterfly, with chronic thickening of the skin and especially of the upper lip.

The *treatment*, aside from prophylactic measures (which are most important, especially in hospitals and foundling institutions), consists in the application of compresses wrung out of solution of aluminum acetate with or without alcohol, or a 2 per cent. solution of lysol, carbolic acid, or creolin, or a 0.2 per cent. solution of bichlorid of mercury; or in painting the skin with pure ichthyol, 15 per cent. ichthyolglycerin, or ecthol.

Internal medication consists in securing daily a copious evacuation of the bowels and, if the heart fails, in the exhibition of heart tonics, with a suitable diet.

Erythema.—In addition to the generalized erythema of the newborn, which can scarcely be considered a pathologic condition, there is a form of erythema which occurs in older children from exposure to the sun, or after an excessively hot bath administered after profuse sweating, or as the result of the application of an evaporating compress, when evaporation has been incomplete because a rubber covering has been used. Erythema is sometimes the precursor of some infectious disease; or it may be due to some toxin contained in

the food or to drugs. Under these conditions it manifests itself as a generalized striaform or macular eruption, which fades after a few hours or days and is followed by slight desquamation.

The condition does not require any special treatment unless there is excessive itching, which is readily relieved by repeated cool sponging with vinegar water (1 : 2), or water with the addition of bathing whisky or alcohol; or by dusting with Venetian talcum and rice flour.

Œsophagus, Stricture of. See POISONING.

Essential Paralysis of Children. See PARALYSIS, SPINAL.

Excessive Perspiration. See HYPERIDROSIS.

Exophthalmic Goiter. See GOITER, EXOPHTHALMIC.

Eye, Diseases of.—Only those diseases of the eye which can safely be treated by the general practitioner without calling in the aid of a specialist will be discussed in this work.

Ciliary Blepharitis.—This disease is often a sign of latent scrofulosis. The edge of the lid appears more or less thickened, red, and covered with small scales and crusts, or even ulcerated.

The adherent crusts must be softened with oil or ointments, and then removed as in the case of eczema. In severer grades of the disease compresses saturated with lead acetate or boric acid are required. In the evening an ointment consisting of 1 per cent. zinc oxide or of 10 per cent. white or yellow precipitate must be well rubbed into the edges of the lids.

Internally, cod-liver oil or some of its various preparations (see SCROFULOSIS), or iron preparations, are indicated; the hygiene of the room must be attended to, and the child must spend a great deal of time in the open air.

Strabismus.—Strabismus is often the result of developing myopia, hypermetropia, some opacity in the refracting media, or an intra-ocular disease. In every case the necessary examination to determine the presence of some one of these conditions must be made. As regards prophylaxis, the squint may be prevented from increasing by keeping the sound eye bandaged for hours at a time, and making it impossible to fix near objects. Visual exercises with stereoscopic pictures act favorably in many cases.

Strabismus differs from the various ocular palsies so common in childhood by the fact that the squinting eye does not lag as the eye is turned in various directions, but always follows the other eye with a certain constant degree of divergence. Convergent squint occurs chiefly (in about three-fourths of all cases) in hypermetropes, while about two-thirds of all cases of divergent squint are associated with myopia.

Foreign Bodies.—Foreign bodies on the conjunctiva are removed by everting the corresponding lid after the repeated instillation of a 2 to 5 per cent. solution of cocain. To remove a foreign body from the cornea, the eye is also anesthetized, and an eye-spud is usually required.

Conjunctivitis.—In many cases the eyes should first be examined for the possible presence of hypermetropia or astigmatism. The *treatment* consists in the application of compresses wrung out of zinc sulphate solution (1 : 300) or lead water, or the instillation of zinc sulphate ($\frac{1}{2}$–1 : 100 parts of water), or Graefe's collyrium (collyrium adstringens lutei) 5 parts to 10 of water. If the lids are everted and the secretion is abundant, a daily application of 1 to 2 per cent. silver nitrate solution, followed immediately by irrigation with saline solution, is indicated.

In the phlyctenular form the eyes must have complete rest and protection from the light, and, in addition to being kept clean, require the application of an ointment of yellow oxide of mercury in the strength of 1 per cent., or insufflation of calomel once a day.

(For a discussion of gonorrhœal conjunctivitis, see CONJUNCTIVITIS NEONATORUM.)

Diseases of the Cornea.—Of these only the form which accompanies conjunctivitis and is characterized by superficial loss of epithelium and ulceration will be discussed. In these cases atropin in the strength of ½ per cent. (2 gr. to 1 fl. oz.) must be instilled every day and the eye covered with a protective bandage. After the inflammatory symptoms have subsided, Pagenstecher's yellow precipitate ointment (1 per cent.) and insufflation of calomel must be employed.

Facial Paralysis. See PARALYSIS, FACIAL.

Facialis Phenomenon (*Chvostek's Phenomenon*).—This reaction is very striking and consists in short, lightning-like contractions of some or all of the muscles of expression supplied by the facial nerve, elicited by tapping over the lesser pes anserinus with the finger or percussion hammer.

Similar contractions, due to overexcitability of the nerve-trunks, can also be elicited in the muscles of the extremities. These symptoms are observed chiefly in tetany (*vide*).

Fatty Degeneration of the Newborn, Acute. See BUHL'S DISEASE.

Feeblemindedness. See IDIOCY.

Feeding, Artificial.—Whenever the mother, for reasons to be mentioned later (see FEEDING, NATURAL), is denied the privilege of giving her infant the breast, or when on account of social conditions a wet-nurse is out of the question, the infant must during the first months of its life be fed artificially with the milk of one of the lower animals. For this purpose cows' milk is always selected because it is everywhere obtainable, while milk from other animals, such as she-asses and goats, is rarely to be had.

In view of the difference in the chemical composition of human and cows' milk, our efforts must first be directed toward rendering the cows' milk as nearly as possible like human milk in composition by suitable dilution. In doing

so, however, great difficulties are encountered because the individual nutritive constituents of cows' milk, even after it has been suitably diluted, are not equivalent to those contained in human milk. The chemical difference is chiefly in the albuminoid bodies, which cannot by any form of dilution, either with water or some mucilaginous substance, be made to undergo the same process of coagulation in finely divided flocculi as the casein contained in human milk.

For this reason it is necessary, in the case of weakly children, to reduce the albumin to 1 per cent., which is lower than the percentage of albumin in breast milk, and we therefore begin by adding from three to four times the quantity of water. As the age increases and the child grows and de-

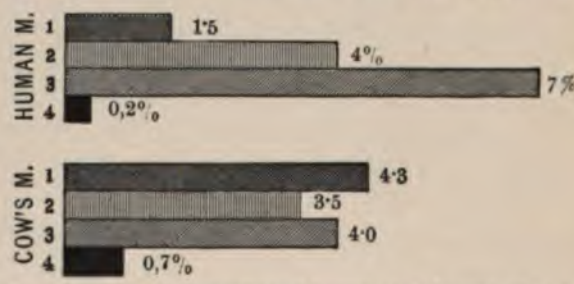


FIG. 33.—Scheme showing the composition of human and of cows' milk: 1, Albumin: 2, fat; 3, carbohydrates; 4, salts.

velops—which must be determined not only by inspection but by noting the increase in body-weight—and if the digestion is normal, the percentage of casein may be gradually increased every week by adding a little more milk and correspondingly reducing the quantity of water. As the age increases and the need for nourishment becomes greater, a corresponding change in the composition of the milk becomes necessary. If the newborn infant is vigorous it may be at once placed on a mixture of 1 part of milk to 2 parts of water, which, under suitable precautions, may be gradually increased during the second month until the mixture contains equal parts of milk and water. [These proportions for a newborn baby are entirely too high. A dilution of 1 part to 5 of water would be much safer for an initial formula; and

in order to secure a higher fat-percentage than would be obtained from diluting whole milk, 8 ounces should be poured off from the top of an ordinary quart bottle of milk on which the cream has risen. This would yield a weak cream containing about 10 per cent. of fat, and when diluted as here suggested would raise the fat percentage of the mixture to about 1.6. A dilution of 1 : 4 would yield 2 per cent. fat, and 1 : 3 would give 2.5 per cent. fat.—ED.]. Gradually, during the fourth or fifth month, the strength of the mixture is increased until it contains only ⅓ water, and during the ninth or tenth month 3 to 4 parts of milk to 1 part of water, after which undiluted milk may be given. In recommending the above methods it is taken for granted that the milk in its percentage-composition satisfies the requirements of a good milk. Unfortunately this is very rarely true of the milk usually obtained in the trade. By taking the specific gravity and determining the fat-percentage it is usually found that the dealer has already diluted the milk, so that further dietetic dilution is unreliable. For this reason it is impossible to formulate a prescription for reliable dilution of the milk, and in every case the milk should at first be examined by means of a milk-tester (lactometer) (see MILK EXAMINATION). This precaution may be omitted only in those cases in which the source of the milk supply is above all suspicion, as when it is obtained from large dairies or pediatric institutions which enjoy a good reputation and usually furnish unexceptionable, although unfortunately also high-priced, milk.

[While the simple addition of water serves to reduce the percentage of the proteids of cows' milk, such a dilution occasions a corresponding reduction in the percentages of the fat, sugar, and salts, the fat and sugar percentages especially falling considerably below those found in mother's milk. The deficiency in fat can be made up by the addition of appropriate quantities of cream. The sugar percentage can be raised by the addition of chemically pure milk-sugar, and the salts can be supplied by the addition of ordinary table

salt in the proportion of 3 gm. (45 gr.) to the liter (quart) of milk mixture, or about 1 thimbleful.—Ed.].

These physiologic indications as regards sugar and salts are also satisfied by Loeflund's milk-sugar with nutritive salts and Soxhlet's nutritive sugar, which latter consists of dextrinized flour enriched with maltose, a suitable quantity of milk-sugar, soluble calcium salts, and 2 per cent. of sodium chlorid. Since the addition of a 6 to 8 per cent. solution of milk-sugar is required, the necessary percentage will be obtained by adding a teaspoonful of the above-mentioned nutritive sugar to 100 c.c. (3 fl. oz.) of water. The addition of this quantity of milk-sugar at least partially compensates for the absence of a suitable fat-percentage in the milk mixture.

The question of rendering more digestible the casein of cows' milk, which is very difficult of digestion, has occupied the attention of pediatrists for some time. For this purpose various substances have been suggested, such as mucilaginous decoctions of rice, barley, or oatmeal, or a suitable admixture of Timpe's milk-powder, and more recently of pegnin, which is a sterilized rennet in combination with milk-sugar. For practical purposes, 1 tablespoonful of pegnin is added to 1 liter (quart) of undiluted, warm cows' milk; this causes a separation of the casein in large floccules, and the mixture is then shaken until the large floccules disappear and the casein is suspended in the milk in the form of a thin emulsion, after which the milk is diluted in the usual way. This chemical process, which is achieved with a variable degree of success, forms the basis of a number of milk-substitute foods, among which may be mentioned Pfeiffer's pancreas-milk, Voltmer's muttermilch, Backhaus's milk-food, which is treated with trypsin, and Monti's milk, which is prepared from freshly-curded milk. The lack of fat in diluted cows' milk is supplied in Biedert's cream-mixture, Gärtner's fat-milk, and Monti's milk, which, like the preceding, are supplied to the trade sterilized and in individual portions, the percentage mixture being adapted to the child's age. Lahmann's vegetable-milk must also be mentioned in this connection; it

differs from other milk substitutes in the absence of carbohydrates and in the abundance of salts and fat which it contains.

Whether diluted cows' milk or one of the above-mentioned preparations is used in artificial feeding, the reaction must always be tested with violet litmus-paper before it is administered, especially during the hot season of the year. The occurrence of digestive disturbance in an artificially-fed baby should always be the signal for the immediate reduction of the simple milk-mixture, or a return to a lower number of Backhaus's, Monti's, or Biedert's milk, if any of these latter preparations are used (see GASTRO-INTESTINAL DISEASES OF INFANTS). Instead of using water as a diluent, as before, chamomile-, sassafras-, caraway-, or Russian tea, acorn coffee, cocoa, or calves'-foot soup may be employed. In this connection the success which attends the use of Liebig's soup in follicular enteritis and simple atrophy (marasmus) ought to be emphasized.

Liebig's soup is prepared as follows: 20 gm. (5 dr.) of carefully ground malt are placed in a glass or porcelain dish and moistened with 40 c.c. (10 fl. dr.) of distilled water to which 16 drops of solution of potassium carbonate have been added. The mixture is well stirred and allowed to stand half an hour. In another porcelain vessel, 20 gm. (5 dr.) of Weizen-Mundmehl (wheat table-meal) is mixed with 200 c.c. (6 fl. oz.) of fresh cows' milk from which the cream has not been removed, until a soft porridge is produced; this is now added to the malt mixture with constant stirring. The resulting mixture is then allowed to stand one-quarter of an hour in a warm water-bath or on the warm range. It is then boiled and passed through a fine hair sieve or gauze. To make enough for the entire day, two or three times as much as the above-mentioned quantity must be taken. The boiled milk-malt soup is put away in the refrigerator or kept cool in cold water. Before it is given it must be suitably diluted, according to the child's age or condition, with water, cocoa-water, malt coffee, or acorn coffee, and again brought to a boil. Liebig's soup can also be prepared with less trouble

from Loeflund's malt-soup extract, or from the powder devised by Hell of Troppau. This milk-malt soup, in whatever way it may be prepared, is suitably diluted with water or one of the above-mentioned coffee or cocoa substitutes. During the period of weaning, children not infrequently have an unsurmountable distaste for milk, which may be overcome by temporary or permanent admixture of the milk with malt-coffee or rice-coffee or one of the various cocoa preparations, such as maltin-, mutase-, oat-, or nutritive-salt-cocoa.

The addition of so-called infants' foods is not permissible before the sixth month; after that period they may be added to the milk once and later twice a day.

We now have a wide choice of such preparations, among which, without attempting to give a complete list, may be mentioned: Kufeke-Mehl, Klopfer's, Nestlé's, Loeflund's Kinderzwieback-Mehl; Odda's and Theinhardt's infant foods; Benger's Food; Nährstoff Heyden; rakahout and farina. There is a special class of foods which differ from those in the above list by the fact that they contain no starch and consist of malt; this class includes Mellin's Food, Gehe or Scherin's malt-powder, and the Doppel Schiff's Mumme. From the ninth to the tenth month a so-called milk-pudding may be given once or twice a day in addition to these preparations in order to inaugurate the gradual change to more solid fare. Such puddings are prepared from tapioca, cracked rice, Kindergriess (resembles "cream of wheat"), Salzburger Kraft-griess, Himmeltau, mondamin, maizena, arrowroot, oatmeal, and Oppel's Nährzwieback. Any one of these foods may also be boiled with the soup. This may also be begun between the ninth and the tenth month. In order to render the soup more nutritious as well as more palatable, from ½ to 1 teaspoonful of puro, carnigen, Valentine's meat-juice, or fresh meat-juice may be added. A little later a yolk of egg or the half of an egg may be added to the soup while it is boiling, and at this period a heated or soft-boiled egg may also be given.

Meat in the form of purée or scraped meat should not be given before the sixteenth or eighteenth month; it may

then be combined with strained green vegetables or potato or apple purée.

The use of evaporated milk foods is to be condemned, since fresh cows' milk is obtainable practically everywhere. Exception to this rule should be made only when a child that has been brought up on artificial food is to be taken on a long journey, during which it is impossible to obtain cows' milk every day.

The deleterious effect of bacterial pollution on the purity of cows' milk has already been mentioned. In order to limit the growth of bacterial germs which enter the milk from without, the milk should be cooled immediately after it is

FIG. 34.—Milk boiler with lid to prevent running over. (Soltmann-Flügge.)

taken from the cow. The consumer, however, must, as soon as he receives the milk from his dealer, subject it to some process which will afford at least a partial guarantee that all virulent germs have been destroyed. Among these procedures may be mentioned boiling the milk for a few minutes in a Soltmann-Flügge boiler, followed by cooling; sterilization of the milk in individual portions, after Soxhlet's method; and pasteurization (see Figs. 34–37). In regard to the method of sterilizing the milk in individual portions in a glass graduate, after it has been mixed with water or some other diluent, it is a method in universal use, and it need only be mentioned that the sterilization should not be prolonged beyond fifteen or at most twenty minutes, in order to

FIG. 35.—Soxhlet's sterilizing apparatus.

avoid excessive boiling of the milk. Pasteurization avoids many of the disadvantages of Soxhlet's method, which injures

FIG. 36.—Ollendorf's pasteurizing apparatus.

the taste, impairs the nutritive value and assimilability of the milk, and sometimes has an injurious effect on the child.

As pasteurization ought surely before long to find its way into general use, it seems desirable to give the directions for the use of Ollendorf's apparatus, which is the one most commonly used at the present time (Fig. 36). [In America, Freeman's apparatus is in general use (Fig. 37).]

Mixed milk from several cows ought to be prepared as soon as possible after milking, or at least immediately after its delivery. If boiling is necessary, the diluent and all other substances that are to be added to the milk according to the prescription must first be boiled separately and added to the cold milk. The mixing is done in a graduate having a capacity of 1½ L. (1½ quarts) or 1500 c.c. (3 pints) with subdivisions into deciliters.

FIG. 37.—Freeman's pasteurizer.

The quantity necessary for twenty-four hours is then poured into carefully cleansed, preferably boiled, feeding-bottles which hold 150, 200, 250, or 300 gm. (5, 6, 8, or 10 oz., approximately), in such a way as to leave an empty space equal to at least three finger-breadths in the neck of the bottle. The mouths of the bottles are then covered with the well-

a *b*

FIG. 38.—Ollendorf's rubber caps. *a*. Before cooking; *b*, after cooking.

known Ollendorf rubber caps (Fig. 38), after first opening the ventilating slit in the cap by pressing down between the two flanges. The rack containing the bottles is then placed in the boiler, which is filled with cold water to the same level as the milk in the bottles. The lid (steam cap) is then put on, and a thermometer, which has been previously moistened,

introduced into the perforated rubber stopper until the number 60° is just visible above the loose covering of the stopper. The boiler with its contents is now placed over a low fire until the thermometer registers 75°. The boiler is then taken away from the fire without opening and pushed to one side so that the thermometer continues to register 75° for an additional period of thirty minutes or at most sinks no lower than 70°. At the end of this time the steam cap is taken off, the bottle-rack containing the bottles removed, and the bottles cooled with cold water until they are perfectly cold and the rubber caps have retracted of their own accord. The bottles thus prepared must be put away in a cold place, in the cellar, in the ice-box, or in cold water which must be frequently renewed, and kept there until they are to be used, for refrigeration is the most important factor in the preservation of milk. To warm the milk before feeding, a vessel known as a warming-cup, and especially designed for that purpose, is used. This cup is filled a little over half-full with lukewarm water, and the bottle placed in it for ten minutes before it is given to the baby. The rubber cap is not removed from the bottle until the baby is ready to feed, when it is quickly replaced by a rubber nipple, the interior of which has been previously carefully cleansed with a little brush. The air-hole in the rubber caps is opened every time the cap is used, in the way already described. The rubber caps are cleansed daily by rubbing and rinsing in water; once a week they should be warmed for thirty minutes in a hot solution of sodium bicarbonate.

When the milk is simply boiled and then cooled, the milk-mixture, after the diluent has been added, must be boiled once more before it is given to the child. It is then poured into the nursing-bottle and heated to body-heat before being administered. Nursing-bottles and nipples must always be kept as clean as possible and placed in water containing a little soda after each feeding. Finally, it should be mentioned in regard to "artificial feeding" that some risk always attaches to its employment, as mortality statistics show, and the method therefore fully deserves its name. The simpler the

method employed, and the less elaborate the manipulations, the better will be the chances of success.

Feeding, Natural.—Whenever it is at all possible a mother should consider it her first duty toward her child to nurse it, if only during the first weeks or months. If any valid obstacle to the continuation of breast-feeding arises, such as lack of milk or other good reason, the child should at first be fed partly on the breast and partly on the bottle, as a mixed diet of this kind is still preferable to exclusive artificial feeding.

If, however, the newborn infant for reasons which will be discussed later is denied its mother's milk, the method of election in all cases in which the parents' circumstances are at all favorable is feeding by a wet-nurse, and the physician should not be induced to resort to artificial feeding except by the most cogent reasons. [Theoretically this is sound advice. In America, however, owing to the more extensive utilization of wet-nursing in institutions and the independence of respectable mothers of the lower class, it seems more and more difficult to obtain wet-nurses. In the great majority of cases skilful direction of artificial feeding from the very beginning is followed by the most satisfactory results.—ED.]. Another argument for strongly recommending feeding at the breast is that breast milk affords protection against disease, both in earliest infancy and during later years, and there is not the slightest doubt that in most cases the infant thrives better and gives its parents less anxiety when fed on its mother's milk.

Every mother should therefore be instructed that it is her duty to nurse her child, and with that end in view measures should be adopted before the woman's delivery to encourage the development of the mammary glands, which normally enlarge at that period, and to harden the nipples. With regard to the first indication, all tight clothing must be avoided, especially during the last stages of pregnancy. The nipples should be sponged with cold water or water containing brandy or alcohol, or painted with absolute alcohol,

tincture of myrrh, tincture of galls, or tincture of rhatany, in order to develop in them the resistance necessary to guard them later on against traumatism and the formation of fissures.

The mammary glands always contain enough milk to feed the infant at least during the first weeks of its life, if not immediately after the woman's delivery, at the latest on the sixth or eighth day. If this should not be the case, artificial feeding should be begun during the first days, and, as the yield of the mammary glands increases, should be gradually replaced by breast milk. But, in addition to the lack of milk, there sometimes arise obstacles to natural feeding which depend upon pathologic conditions. The nipples may be so imperfectly developed as to render sucking impossible, and although artificial nipples, of which there is a great variety (Figs. 39–46), may be used, the sucking power that can be exerted on the glands by this means is nevertheless very limited, and in most cases the milk production under such circumstances continues to decrease.

In many cases, although the mother has plenty of milk, nursing may be contraindicated on account of profuse hemorrhage during labor, or on account of puerperal fever, or some other disease associated with high fever, or violent pain due to fissures in the nipple or inflammation of the gland (see NIPPLE, FISSURE OF). Women who present even a suspicion of tuberculosis or scrofulosis, and hysteric, neuropathic, or epileptic mothers should be told in as cautious and gentle a manner as possible that they ought not to nurse their children.

Any severe disease associated with high fever and occurring during the period of nursing, especially a grave infectious disease, is a signal for weaning the child and either employing a wet-nurse or instituting artificial feeding.

Menstrual hemorrhages occurring during the period of nursing do not constitute a contraindication, except in those cases in which the menses recur regularly and the infant with equal regularity exhibits marked dyspeptic symptoms with loss of weight. Even in these cases, however, the child

should not be taken from the breast altogether at first; the nursings may be restricted in number and the infant's diet supplemented by artificial feeding, or breast-feeding suspended altogether during the period of menstruation only.

FIG. 39.

FIG. 40.

FIG. 41.

FIG. 42.

FIG. 43.

FIG. 44.

FIG. 45.

FIG. 46.

FIGS. 39 to 46.—Various artificial nipples and breast-pumps.

Children with hereditary lues should be nursed by their mothers, and the practice is quite devoid of danger. It should be emphatically stated that to permit the employment of a wet-nurse in such cases is justifiable only if the nurse has first been warned of the danger to her health.

If the newborn infant is fortunate enough to be fed by its own mother, there are certain points to be remembered during the subsequent course of the nursing period. The infant should be put to the breast for the first time when it awakens from the first long sleep, which is so grateful to both mother and child.

Although the first attempts at nursing are attended with doubtful success, the efforts of the child, nevertheless, have a good effect on the mother not only by exciting uterine contractions, but also by encouraging the flow of milk. After the infant has been put to the breast for the first time, the intervals that should elapse between feedings will depend on the child's condition and the quantity of milk taken at the first feeding, which is either estimated or determined by weighing.

If, after the child is taken away from the breast, the result as regards the quantity of milk and the child's condition is not satisfactory, a milk-mixture may be given either at once or after a suitable interval, even at the beginning of the nursing period.

If, however, it is evident by the child's condition and its steady increase in weight that it is getting enough nourishment for its needs, it must be put to the breast every two hours during the first three weeks, and during the fourth, fifth, and sixth weeks every three hours during the day. It is not wise to make the intervals longer, if only on account of the overloading of the stomach and the dyspepsia which is apt to ensue.

In order to enforce the same number of feedings rigidly every day it is necessary at first to wake the baby at nursing-time, which is the less objectionable, as the child has to be changed and have its mouth washed out. During the night the intervals between nursings should be made as long as possible, and, providing the child gets enough nourishment, it is better to give a feeding of cold and slightly sweetened chamomile tea rather than put it to the breast too often.

It is not feasible to determine accurately how long an individual feeding should last, because it depends on how

rapidly the child sucks and on the yield of the mammary gland. As a rule, the baby will not nurse longer than from ten to fifteen minutes, and a healthy infant should be allowed to remain at the breast until it has fallen fast asleep.

The infant's condition and the actual increase in weight enable one to determine whether it is getting sufficient nourishment (see WEIGHT, INCREASE IN).

During the first few days, and sometimes in the case of premature infants who do not suck properly, it may be necessary to weigh the infant before and after the feeding in order to determine how much milk it has taken.

The following table has been devised for determining the necessary quantity of milk. During the first weeks of life the daily quantity of food taken by breast-fed infants is equivalent to about $\frac{1}{8}$ of the body-weight; the quantity gradually diminishes, and between the middle of the first and the middle of the second period of three months ranges from $\frac{1}{8}$ to $\frac{1}{7}$. At the end of the first half-year it is equal to about $\frac{1}{8}$ of the body-weight.

Week.	1	2	3	4	5	6	7–8	9–12	13–16	17–20	21–24
Grams.	300	550	600	650	700	750	800	825	875	925	1000

This applies to children weighing more than 2500 gm. (about 5 lb.) at birth.

A few words should be added in regard to the feeding and mode of life of the nursing mother, as well as the time when the infant should be weaned and the proper method to employ.

A nursing mother should receive a nourishing mixed diet, which should not differ too much from what she had been accustomed to take before the baby's birth. Excessively long intervals between meals should be avoided; hence a glass of milk or cocoa should be taken during the night. Somatose, plasmon, hygiama, or tropon should be added to the fluid portions of the diet several times a day, if only because these substances increase its nutritive value. If the appetite is good and enough is taken at one meal, and if the bowels are regular, the practice of giving light beer may be dispensed with.

The current tendency to excessive caution in the choice of food is to be deprecated, as its natural effect is to reduce the diet to such a monotony as to injure the appetite and cause diminished milk-production. Hence, whenever the baby has a dyspeptic stool, the cause should not first be sought in the quality of the food that the mother has taken, as it is much

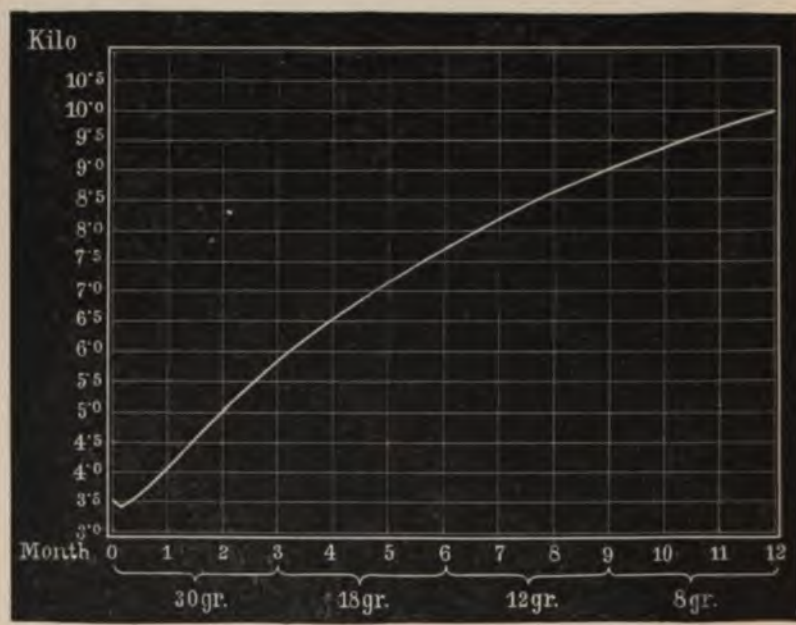


FIG. 47.—Normal weight-curve during the first year of life. The average daily increase in weight is given in the lowest row of figures.

more likely to be due to some other and certainly more injurious cause.

The nursing mother should lead a regular life, free from psychic and sexual excitement. Care and anxiety, the reappearance of regular menstruation, and especially a renewed pregnancy, often cause a change in the milk or diminish the secretion. A daily cold sponge- or a warm-bath, with plenty of exercise both in the open air and in the house, may be permitted.

The time of weaning depends partly on the physical

condition of the mother, and partly on the growth of the child. If after nursing her baby for a certain time the mother shows signs of anemia and complains of fatigue and bodily weakness after slight exertion (dragging pains in the sacrum and in the shoulder-blades), if the appetite begins to suffer, or if some disease from which she has suffered previously —such as catarrh of the respiratory organs—makes its appearance again, the child must be weaned. If possible, however, this should not be done during the warm season, and the process should be a gradual one.

The correct method to wean a child is to begin with a bottle of artificial food, at first once, and after a few days twice, a day, keeping careful watch over the child's condition. The choice of artificial food will depend chiefly on the child's age, and requires a knowledge of artificial feeding (see FEEDING, ARTIFICIAL) and great care in the selection of the food to be employed.

If in urgent cases and in the case of young children the weaning cannot be carried out satisfactorily, one is often driven to employ a wet-nurse. Dentition or even fully erupted teeth are not a sufficient reason for weaning, unless they produce painful erosions of the nipples. In the case of healthy women whose general health is not affected by nursing, the children are fed exclusively on the breast until the sixth or eighth month, when weaning is begun, unless it happens to be summer-time. Again, the actual increase in weight (see WEIGHT, INCREASE IN) affords the best criterion and should receive due consideration during the period of weaning.

In order to guard against any disturbance or disease of the mammary glands after the child has been weaned, a corset should be ordered, or the breast supported with a bandage which permits free evacuation of the accumulated milk. If pain develops in the breasts, a wet compress wrung out of aluminum acetate solution and covered with an impermeable covering is applied.

If the milk secretion continues after the infant has been weaned—in rare cases the flow may persist for months—an

attempt should be made to reduce it by restricting fluids and giving laxatives.

The breasts, during the period of nursing and afterward, are often kept unnecessarily warm. If the milk flows easily, the breast should be covered with a cloth. Care should be taken always to protect the breasts against pressure and congestion of the circulation in the dependent portions, in cases of pendulous breasts, by ordering a maternity corset or some cheaper form of supporting bandage.

In order to guard against erosions or fissures of the nipples, the latter should be cleansed, before and after nursing, either with cold boiled water containing a little alcohol, or with a 2 per cent. solution of boric acid, or a mild solution of potassium permanganate (see also NIPPLE, FISSURES OF).

Fever Blisters. See HERPES FACIALIS.

Fever, Enteric. See TYPHOID FEVER.

Fever, Glandular. See GLANDULAR FEVER.

Fever, Malarial. See MALARIA.

Fever, Scarlet. See SCARLATINA.

Fever, Spotted. See MENINGITIS, EPIDEMIC CEREBRO-SPINAL.

Fever, Typhoid. See TYPHOID FEVER.

Fever, Typhoid, Widal Serum-reaction in. See WIDAL SERUM-REACTION.

Fibrinous Rhinitis. See RHINITIS FIBRINOSA.

Fingers, Supernumerary. See POLYDACTYLISM.

Fissura Ani (*Fissure in Ano.*)—The lesion may be super-

ficial or may represent a deep tear in the mucous membrane of the anus. The *causes* are to be found in traumatism, either internal, by hard, inspissated masses of feces or small foreign bodies contained in the feces, or external, the injury having been produced by some object such as the hard point of a syringe or an irrigator. Among external causes should also be mentioned injury by the finger-nail when there is itching of the anus or some erythematous or intertriginous disease of the skin around the anus, such as frequently occurs after some intestinal disease or in the presence of worms.

The *symptoms* of fissure in ano consist in tenesmus (spasm of the sphincter), which is brought on by defecation or even by the passing of flatus. The pain is often exceedingly severe and is followed by a general nervous excitement; the child puts off going to stool as long as possible, and in that way the condition leads to chronic constipation (*vide*). When evacuation finally takes place, attended by intense pain, the fecal masses are dry, inspissated, scybalous, and more or less blood-streaked. Aside from the nervous irritation, which is often excessive and is kept up and increased by the insomnia, disturbances of the bladder, in the form of strangury or anuria, are observed.

The *treatment* of the disease, which in spite of its striking symptoms often remains undiscovered for some time, is tedious, and when a cure has finally been effected, the newly healed fissure may at any time be reopened by the passage of a constipated stool, or another fissure may form. The symptomatic treatment consists, above all, in regulating the diet so as to prevent inspissation of the fecal masses and also in administering laxatives almost daily (see CONSTIPATION). Enemas and colonic irrigation must either be avoided altogether or performed with a carefully disinfected colon tube of suitable size, well greased with vaselin.

Locally, an ointment containing 10 per cent. of boric acid or 1 to 2 per cent. of silver nitrate may be used; a 5–10 to 20 per cent. zymoidin ointment or analan has also been used with good results. These ointments are introduced into the rectum on a tightly-wound cotton applicator and distributed

over the entire periphery of the tube by rotating it several times. The fissure may also be touched with a 10 to 20 per cent. solution of silver nitrate or even with the solid stick, or it may be painted with ichthyol. In order to diminish the pain when this last-mentioned treatment is employed, cotton pledgets saturated with a 2 to 4 per cent. solution of cocain or with aneson are first applied, or a suppository of anesthesin 0.1 to 1 gm. (1½–15 gr.) of cocoa butter may be previously administered. In rare cases, when the fissures are very severe or recur constantly on account of narrowing of the anus, bloodless distention of the sphincter or even sphincterectomy may be required.

Fissures of Nipple. See NIPPLE, FISSURES OF.

Flatfoot (*Pes Valgus*).—This is a very frequent deformity and during the early stages attracts little attention, until it is found that prolonged walking or standing causes much pain in the ankles or in the heels, and that obvious changes in the skeleton of the foot have developed. Frequently flatfoot is associated with hyperidrosis pedum.

The *cause* in many cases is found in weakness of the muscles and ligaments due to rachitis, in delayed ossification and overloading of the tarsal bones, and last, but not least, improper shoes.

The *treatment* consists, first of all, in restricting walking and standing, massage of the ankles, and ordering well-fitting laced shoes, which must be made to measure. An essential requisite of such a shoe is that the great toe shall not be forced outward from its normal position. In bad cases an inside sole must be worn, and, in addition, the foot may have to be bandaged in the varus position by means of thin linen or flannel bandages before the shoe is put on. Severe grades of flatfoot require a permanent dressing or orthopedic flatfoot-boots with an external steel splint. Whenever there is a tendency to flatfoot the inner edge of the sole and the heel of the shoe must be raised.

Flesh-navel. See UMBILICUS, DISEASES OF.

Fluor Albus. See VULVOVAGINITIS.

Follicular Enteritis (*Catarrh of the Large Intestine*). See GASTRO-INTESTINAL DISEASES OF INFANTS.

Follicular or Lacunar Angina. See ANGINA, LACUNAR OR FOLLICULAR.

Folliculitis, Universal. See FURUNCULOSIS.

Foreign Bodies in the Ear. See EAR, DISEASES OF.

Foreign Bodies in the Eye. See EYE, DISEASES OF.

Frost-bite (*Chilblain*).—In debilitated and anemic children exposure to excessive cold often produces an erythematous inflammation of the fingers or toes. The first grade of frost-bite manifests itself by circumscribed redness or bluish discoloration and swelling of the skin. This gives rise to itching and burning, especially in the presence of warmth, so that scratch-marks are usually found with it.

If to the above-mentioned changes increased exudation with separation and vesicle formation of the epidermis (congelatio bullosa) is superadded, usually as the effect of the pressure of the shoe on the toes, the separated layer of epidermis may rupture and rhagades and ulcers may result.

Treatment.—In the presence of any predisposition to frost-bite the general nutrition must be improved and measures adopted to harden the parts likely to be exposed. The local treatment for frost-bite of the first degree consists in the application of tincture of iodin, collodion, aristol (1 : 9 of traumaticin), thiol; tannic acid 2 gm. (30 gr.) to 50 c.c. (1½ fl. oz.) of spirit of camphor; or an ointment consisting of lead plaster and yellow vaselin, each 40 gm. (10 dr.), olive oil 20 gm. (5 dr.), carbolic acid 2 gm. (30 gr.), oil of lavender 30 gtt.; or camphor 30 gm. (1 oz.), lanolin, vaselin, each

15 gm. (½ oz.); pure hydrochloric acid 2 gm. (30 gr.); or a 20 per cent. bromocoll ointment.

To restore the tone of the vessels, hot bran-baths should be prescribed twice a day, the injured limb being immersed first in the hot bath and then in a vessel of cold water.

Fungus Umbilici. See UMBILICUS, DISEASES OF.

Furunculosis (*Universal Folliculitis*).—This disease occurs usually in debilitated children suffering from chronic malnutrition. The *first signs* of furunculosis usually make their appearance on the occipit or on the back, and are quite possibly due largely to the sweating which is present in rachitis and to the fact that the diapers are not changed often enough. Sometimes multiple furuncles appear after infectious disease, especially infectious intestinal catarrh; in such cases the disease is to be regarded as a metastatic process. The furuncle begins as a hard, infiltrated nodule covered with normal skin; that is to say, the process represents a suppurative folliculitis and does not lead to the formation of a necrotic plug as in the case of adults. The nodule gradually softens, the skin reddens and becomes thinner, and, unless the nodule is incised, spontaneous rupture takes place. The pus dries on the skin and may infect the immediate surroundings, thus causing another furuncle.

Sometimes the contents of the nodule are not purulent, but consist of thick blood, when the lesion is known as a hemorrhagic pustule. The latter sometimes undergoes absorption and leaves behind an infiltration of the skin with blue pigmentation, which may persist for a long time; sometimes, however, such nodules also rupture spontaneously and cause fistulous processes in the skin, especially in scrofulous children, or, if the overlying layer of skin is necrotic, gangrenous ulcers.

Treatment.—Individual boils may be treated with compresses steeped in liquor Burowi or a freshly prepared 1 to 3 per cent. solution of hydrogen dioxid, 2 per cent. carbolic acid, or 0.2 per cent. bichlorid of mercury solution, and cov-

ered with gutta-percha paper or Billroth-batiste, or a piece of salicylated (10 per cent.) soap plaster or mercurial plaster; or the lesion may be painted with equal parts of thigenol and alcohol two or three times a day. If pus forms, the abscess should be incised.

Multiple abscesses of the skin usually must be opened with the pointed bistoury or by puncturing with a hollow needle, care being taken that the pus does not cause further inflammation in other follicles. To prevent this the surrounding skin is protected with a layer of 5 per cent. borated vaselin or lanolin, and, in addition, the skin should be frequently rubbed with an ointment. In addition to these measures a daily disinfecting bath of creolin, lysol, bacillol, or even bichlorid of mercury may be employed.

Internally, yeast, levurin, or furunculin, one knife-point two or three times a day, may be prescribed with good results. In cases of chronic folliculitis the examination of the urine for sugar must not be neglected.

Galactostasis. See NIPPLE, FISSURES OF.

Gangrene of Umbilicus. See UMBILICUS, DISEASES OF.

Gangrenous Stomatitis. See NOMA.

Gastrectasis.—Sometimes as the result of chronic gastric catarrh, and occasionally as a primary condition, especially in children who have been allowed too much fluid or have been overfed with indigestible and fermenting foods, dilatation of the stomach may occur. In rare cases the condition is found in infants as the result of mechanical obstruction, such as congenital stenosis of the pylorus, spasm of the pylorus, or scars following ingestion of caustics (see PYLORIC STENOSIS).

As mentioned in connection with chronic gastric catarrh, the condition, particularly in anemic and rachitic children, gradually leads to atrophy of the mucous membrane and glands, with secondary diminution of the muscular strength, and at first partial and later uniform dilatation.

The outlines of the dilated stomach are often distinctly visible; in the median line the lower border extends to the navel or even lower, and from that point the line runs obliquely upward to the costal margin on the left side. Splashing sounds can often be elicited by palpation several hours after a meal.

The *symptoms* of the disease consist in dyspeptic disturbances, the occasional vomiting of large quantities of fluid, especially in the morning, emaciation, and constipation alternating with diarrhea.

In dilatation resulting from overfeeding or chronic gastric disease the *prognosis* is, as a rule, favorable, in contradistinction to the form due to structural changes at the pylorus; but the prognosis is favorable only if the necessary restriction, both in the number of meals and the quantity of the food, and especially the limitation of fluids, is strictly observed. This is what presents the greatest difficulty in the treatment, both in infants and in older children. For the dietetic *prescriptions* in the case of the latter see the article on Chronic Gastric Catarrh (GASTRO-INTESTINAL DISEASES OF LATER CHILDHOOD). When the dilatation is due to fermentative processes, daily lavage (*vide*) is to be recommended. Internally, antifermentative remedies, such as chloralbacid 0.5 to 1 gm. (7½–15 gr.) two or three times a day; menthol 0.10 gm. (1½ gr.) and tincture of orange 15 c.c. (½ fl. oz.), 10 drops three times a day; resorcin 0.20 to 0.50 gm. (3–7½ gr.) to 70 c.c. (2 fl. oz.) of water, are prescribed. Diarrhea calls for the administration of bismuth preparations, ichthalbin, tannoform, or ichthoform, in doses of 0.20 to 0.50 gm. (3–7½ gr.) three or four times a day.

The constipation which is often present should be combated as much as possible by means of irrigation.

Gastric Catarrh. See GASTRO-INTESTINAL DISEASES OF LATER CHILDHOOD.

Gastric Lavage. See LAVAGE, GASTRIC.

Gastritis, Acute and Chronic. See GASTRO-INTESTINAL DISEASES OF LATER CHILDHOOD.

Gastro-enteritis, Acute. See GASTRO-INTESTINAL DISEASES OF INFANTS.

Gastro-enteritis, Acute Catarrhal. See CHOLERA INFANTUM.

Gastro-intestinal Diseases of Infants.—In view of the *etiologic* and *prognostic* differences obtaining in diseases of the digestive organs in infants and in older children, the separate diseases to be discussed here will be arranged according to a suitable classification. In order to avoid repetition the description of the symptoms in infancy will be referred to in discussing the symptoms as they appear in older children.

Dyspepsia.—The term dyspepsia is used in general to describe a functional disturbance of the stomach and sometimes of the intestine, usually without any involvement or change in the mucous membranes. The disease represents one of the most frequent forms of digestive disturbance and, on account of the *sequels* to which it gives rise, demands as much attention and observation, particularly as regards diet and treatment, as any other gastro-intestinal disease.

Dyspepsia in most cases is *caused* by improper food and the absorption of toxic products (auto-intoxication). In the case of breast-fed infants the dietetic error consists in the feedings being either too abundant or too frequent, or in qualitative changes in the breast-milk caused by menstruation, emotional excitement, errors of diet on the part of the nurse, or diminution of the milk secretion.

In the case of artificially-fed children a great many more causes of dyspepsia come into play. Aside from the above-mentioned factors, the most frequent causes are overfeeding, bacterial pollution of the milk or of the artificial nipples, unsuitable composition of the milk itself with respect to the child's age, or the premature administration of starchy foods to supplement the milk diet.

The *symptoms* of dyspepsia may be summed up as follows: The child becomes restless, especially after taking food, it loses its color, and sleep is disturbed. Either at once or some time after taking food vomiting occurs, the vomited material consisting in part of unchanged food, and in part of more or less coarsely coagulated sour or fetid flakes of casein (curds). The stools are either inspissated, whitish, and very offensive, or increased in quantity and of a greenish color, which either appears at once or after standing for a time. They may be fluid or semifluid, or may emit an intensely acid odor, and the discharge of feces is accompanied by offensive flatus and much noise. In exceptional cases constipation may be present. Acid belching is nearly always present.

The abdomen is distended and sometimes sensitive to pressure; intestinal peristalsis is frequently visible.

The child suffers from attacks of colic, constantly keeps the legs flexed on the abdomen, and has paroxysms of crying. As he often seizes the bottle or breast eagerly when it is presented, the mother thinks the crying is a sign of hunger, and the condition is thus rendered worse by the constant feeding; or the child refuses to be comforted with food and continues to cry until large quantities of flatus have been passed (flatulent colic).

The child may fail to gain in weight from the time the dyspepsia begins, or the body-weight may remain stationary for some time; in severe dyspepsia, however, rapid loss of weight always takes place.

The tongue is usually dry, and thrush often develops in the mouth. The skin around the anus, on the inner sides of the thighs, and sometimes on the inner aspect of the ankles and heels becomes reddened by the acid discharges from the bowel; and sometimes extensive excoriations are produced. The urine is usually scanty and has either an ammoniacal or an intensely acid odor.

In most cases dyspepsia can be corrected in a comparatively short time by changing the diet and instituting proper treatment; otherwise the acute dyspepsia may drift into a

chronic form. Sometimes, however, and especially during the summer season, rapidly fatal cholera infantum or chronic catarrh with consecutive anemia, atrophy, or rachitis may develop. For these reasons the *prognosis* in many cases should be guarded.

Treatment.—From the very beginning of the disease the causes of the dyspepsia must be kept in mind in selecting a line of treatment. In the case of overfed breast- or bottle-fed children the intervals between feedings must be lengthened. Attention must be paid to the condition of the mother, as well as to the quality and dilution of the cows' milk and the care of nursing bottles and rubber nipples. The use of rubber tubes and "mothers' comforts" should be forbidden. As soon as dyspeptic symptoms make their appearance the stomach must be relieved of the accumulated fermenting remains of food, which is best effected by means of gastric lavage, a procedure that is quite easily carried out in infants (see LAVAGE, GASTRIC). The solutions best suited for lavage of the stomach are physiologic salt solution, ½ to 1 per cent. boric acid, 1 per cent. sodium bicarbonate, or a solution of resorcin 1 : 5000. Instead of lavage, calomel 0.015 to 0.020 gm. (¼–⅓ gr.), every hour, in powder form, may be given until the characteristic greenish mucous stools, free from offensive odor, begin to appear. In order to keep the stomach as free from germs as possible, resublimated resorcin 0.20–0.30 gm. to 100 c.c. (3–4½ gr. to 3 fl. oz.); or lactic acid 0.5–1 gm. to 100 c.c. (8–15 gr. to 3 fl. oz.); or sodium benzoate 2 gm. to 100 c.c. (30 gr. to 3 fl. oz.); or dilute hydrochloric acid, 10–20 drops to 100 c.c. (3 fl. oz.) are prescribed. If frequent evacuations of the bowels constitute the most prominent feature in the case, preparations of tannin or bismuth are indicated.

Rapid improvement can also be achieved in some cases by means of enemas. About 150 to 200 c.c. (5–6½ fl. oz.) of lukewarm water, or, better, camomile tea, are introduced slowly through a soft colon tube, and evacuation of the fluid prevented for several minutes by obstructing the opening with the finger. In this way one can secure the discharge

of fecal matter, and especially flatus, in addition to the enema fluid.

In cases of wind colic the mere introduction of a soft rubber tube or a soft catheter to a certain distance is sufficient to produce a copious discharge of flatus and quiet the child at once.

Still more important, especially for the ultimate outcome of the dyspepsia, are the dietetic measures to be employed. The most important indication is the entire withdrawal of any kind of milk food for twelve or even twenty-four hours, during which time either cold pale-yellow Russian tea, flavored with a little milk-sugar or saccharin, or albumin water (*vide*), is administered in tablespoonful doses. When as the result of the starvation diet a manifest cessation of the above-mentioned symptoms has taken place, feeding from the breast or with cows' milk of a higher dilution than before the disease may be begun cautiously and at longer intervals, at first a very little at a time; and not until the general health has been completely restored, the child has begun to gain weight again and the digestion is evidently normal, may a gradual return to feeding every three hours, and to cows' milk in the original strength, be permitted. In breast-fed children the nurse sometimes has to be changed. It is needless to say that in the case of artificially-fed dyspeptic children the ideal treatment consists in securing the services of a wet-nurse. After a child has once had dyspepsia, it must be kept under careful supervision as regards its weight and general condition, because the first attack of dyspepsia is very apt to be followed by relapses.

Acute Enteritis (*Catarrh of the Small Intestine*).—In this disease there is a pathologic change in the mucous membrane of the small intestine, which clearly manifests itself by an increased secretion of mucus.

The *causes* are in part the same as have been mentioned in connection with dyspepsia. In primary intestinal catarrh, especially so-called summer diarrhea, it is probable that a specific micro-organism, which is introduced with the food, may play an important part. [It seems certain that no single

micro-organism is responsible. Escherich and others have found streptococci; Holt, the bacillus pyocyaneus. Flexner, Duval, and Bassett have shown the presence of the bacillus of Shiga in 42 out of 53 cases of acute catarrhal diarrhea of dysenteric type.—ED.] Secondary intestinal catarrh occurs in many infectious diseases, either as a complication or as an integral part of the disease (see TYPHOID FEVER, TUBERCULOSIS).

The *symptoms* of acute enteritis are: The stools suddenly, or after a period of dyspeptic symptoms, become increased in number, fluid, with an acid odor, and often mixed with mucus or coarse coagula of casein (curds), the evacuation of the bowels being accompanied by the discharge of flatus.

Sometimes, especially at the beginning of the disease, there is fever of variable intensity with marked constitutional disturbance. The child is restless, especially before an evacuation of the bowels, cries a good deal, and presents symptoms of intestinal colic; thirst is increased and the urinary secretion diminished; the tongue and the mucous membrane of the mouth are dry, emit a sour odor, and are often covered with thrush; the abdomen is distended with gas, and sometimes sensitive to pressure. Intertrigo develops about the buttocks and on the thighs. The urine, as a rule, contains indican, more rarely albumin.

The *course* and *termination* of the disease depend on the little patient's nutrition, the severity of the infection, and the treatment pursued. In many cases improvement sets in rapidly; in others the acute intestinal catarrh is followed by a chronic condition with consecutive atrophy (see PÆDATROPHY); or the process extends to the mucous membrane of the large intestine, and a follicular enteritis results. Enteritis occurring during the summer months [sometimes] presents the alarming symptoms of cholera infantum (*vide*), and under these circumstances heart weakness and edema of the brain are especially to be dreaded.

It is evident, therefore, that in many cases the *prognosis* is doubtful and depends on many secondary symptoms.

The most dreaded complication is convulsions, which may

occur at the beginning or during a later stage of the disease, or not until just before death. A very frequent complication is bronchitis or catarrhal pneumonia.

In enteritis the *treatment* depends on the etiology, and due account must be taken of the sequels to which the disease gives rise. If the trouble begins as an acute dyspepsia, excellent results will be attained by lavage and enteroclysis and by the administration of a few doses of calomel; but if from the very beginning of the disease the stools are numerous and liquid, the laxative must be withheld and, as has been mentioned in connection with dyspepsia, one of the following remedies prescribed instead: quinin tannate, tannigen, tannalbin, honthin, bismuth subnitrate, bismutose, bismuth salicylate, or bismuth tannate, 0.10–0.20 to 0.50 gm. (1½–3 to 7½ gr.) three or four times a day. When bismuth preparations are given, the attendants must be informed that they cause dark-green or black discoloration of the stools. Other remedies are: silver nitrate 0.02–0.05 gm. to 70 c.c. (⅓–¾ gr. to 2½ fl. oz.), argilla 1 gm. to 70 c.c. (15 gr. to 2½ fl. oz.), resorcin 0.2 gm. to 100 c.c. (3 gr. to 3 fl. oz.), per diem, or ichthalbin and chocolate, equal parts, one knife-point three times a day.

In recent cases opium preparations are not necessary unless violent colic is present in addition to the usual symptoms, or copious discharges from the bowels have already taken place; in that case either tincture of opium (laudanum) in the dose of 1 drop to each year of age, or Dover's powder not more than 0.02 gm. (3/10 gr.) to the dose up to the sixth month, or benzoated tincture of opium may be employed. The drug may also be given per rectum to diminish the intestinal peristalsis and relieve the enteralgia. For this purpose laudanum is administered in a starch enema, which is prepared as follows: A teaspoonful of starch is stirred up with a little cold water and then about 150 c.c. (4½ fl. oz.) of boiling water are added, with constant stirring. After the mixture has cooled to body-temperature, the laudanum may be added in about twice as large a dose as when it is given by the mouth, and the enema is lowly introduced into the bowel,

its immediate return being prevented by compressing the buttocks for a few minutes.

To control the fever, wet packs are ordered every one-quarter to one-half hour until the temperature falls. The colic is controlled by means of warm baths, by light abdominal massage or a hot wet abdominal pack.

In order to relieve the pain light effleurage along the course of the large intestine may be performed at frequent intervals, or a soft colon tube introduced to facilitate the escape of wind.

The *treatment* of the cardiac and cerebral complications occurring in acute enteritis has been discussed in the section on cholera infantum.

Rigorous adherence to the dietetic prescriptions is of the highest importance in this disease also; the diet is the same as that indicated in dyspepsia. It may be laid down as a general dietetic rule that when the feces are acid in reaction and emit an acid odor, albumin must be given; and when albuminous putrefaction is present and the reaction is alkaline, carbohydrates are indicated. The following preparations may be recommended for their astringent properties: acorn cocoa, oatmeal cocoa, acorn coffee boiled in water with Soxhlet's nutritive sugar, rice or barley porridge, and leguminous meals.

Enteritis, Follicular (*Catarrh of the Large Intestine*).—The pathologic change in this disease consists in inflammation of the mucous membrane of the large intestine with secondary swelling and even ulceration of the follicles.

Catarrh of the large intestine occurs either primarily or secondarily to dyspepsia, acute catarrh of the small intestine, or various infectious diseases, such as influenza, scarlet fever, measles, or tuberculosis. When primary the disease is often the result of a specific infection (which is especially true of streptococcus enteritis) or of some chemical irritation. The most striking *symptoms* of the disease are the appearance of the stools and the tenesmus.

In the severe form of the disease, which often sets in with high fever and cerebral disturbances, numerous greenish,

mucous stools, often more or less tinged with blood and emitting a carrion-like odor, small in quantity and accompanied by great pain, are observed. As in the case of enteritis, the loss of strength may be very rapid. In the milder cases the discharges are also blood-streaked and mucous, but the accompanying symptoms, such as fever, loss of strength and weight, and the cerebral symptoms, are less marked. The abdomen is usually soft, and is sometimes retracted and sensitive to pressure in the region of the colon. The tongue is coated and dry, the odor of the breath sour, the thirst increased, and the quantity of urine diminished. The symptoms of tenesmus (spasm of the anus) appear not only after but also before each defecation, and often continue with unabated severity until the next evacuation. The pain resulting from this condition makes the child very restless and greatly interferes with sleep.

The bearing down which accompanies the tenesmus or the normal evacuation of the bowels causes more or less protrusion of the rectal mucous membrane, especially in debilitated children (see PROLAPSE OF THE ANUS). The stools are alkaline in reaction and irritate the rectal mucous membrane and surrounding skin, causing fissures and intertriginous lesions about the anus of variable intensity and extent (see FISSURE IN ANO and INTERTRIGO).

Follicular enteritis runs a favorable course in most cases, but leaves a disposition to relapse. In some cases, particularly in rachitic and scrofulous children, or children who for some other reasons are ill-nourished or neglected, the acute form may become chronic and lead to the clinical picture which from time immemorial has been described as **tabes mesenterica** (*vide*). The *prognosis* in a given case may be deduced from what has been said above.

The *treatment* of acute follicular enteritis is practically limited to local measures—namely, enteroclysis. Before beginning the irrigations, the bowels should be relieved of their contents as rapidly as possible, and this, as experience has shown, is most readily effected by giving a teaspoonful of

castor oil or 1 to 2 teaspoonfuls, or dessertspoonfuls, of syrup of rhubarb or hydromel infantum.

One should not be misled by the fact that the evacuations, although frequent in number and containing mucus, are small in quantity and thus apparently indicate that the intestine does not contain any more fecal matter; for above the section of diseased large intestine, which is spasmodically contracted to a mere cord, there are always large accumulations of feces the evacuation of which is usually followed by a marked improvement; the child, which before had been crying almost uninterruptedly, evidently feeling much better, and sinking into a deep sleep. If the laxative fails to produce any effect, or if the child is in such pain that it seems inadvisable to wait for its effect to manifest itself, some semifluid decoction, either salep or linseed, or even better a starch decoction, about 50 to 100 c.c. (1½–3 fl. oz.), may be given per rectum, with the addition of a little tincture of opium (2 to 3 drops for children under 6 months of age) if there is much pain. The excellent effect which follows this procedure (for the child quiets down at once and goes to sleep) appears to be due, among other things, to the fact that the abraded portions of the mucous membrane which are forced into close contact during tenesmus are held apart by the starch. The enema must not be repeated too often (say twice a day), and immediate return of the fluid must be prevented by mechanically obstructing the flow.

In subacute cases, if the acute symptoms reappear after a period of freedom and the process extends to higher portions of the intestines, thorough irrigation of the colon must be instituted. A soft colon tube is connected by glass tubing with another tube about 80 cm. in length, to which a funnel or irrigator with a capacity of 50 to 200 c.c. (1½–6 fl. oz.) is attached. By alternately elevating and depressing the funnel the fluid is made to flow in and out of the bowel, and this procedure is repeated with a fresh irrigating fluid two or three times until the return flow is free from shreds of mucus. As soon as the condition begins to improve, the intervals

between irrigations are to be lengthened until they are given only every two or three days.

One of the following astringents may be added to the solution: aluminum acetate ¼ per cent., tannin $\frac{1}{10}$–½ per cent., alum acetate 1 per cent., and lead acetate ½ per cent. The irrigations are given once or twice a day, and kept up until no more mucus appears in the return flow.

The local treatment may be supplemented by the administration of tannin preparations (tannigen, tannalbin, tannoform, honthin) 0.20 to 0.60 gm. (3–9 gr.) three or four times a day; guarana 0.5 to 1.5 gm. (8–22½ gr.) per day; quinin tannate 0.1 to 0.25 gm. (1½–4 gr.) three times a day; decoction of colombo root 5 gm. to 100 c.c. (75 gr.–3 fl. oz.); decoction of hæmatoxylon 5–10 gm. to 100 c.c. (75 gr.–2½ dr. to 3 fl. oz.); tincture of coto bark 1–2 gm. to 100 c.c. (15–30 gr. to 3 fl. oz.); silver nitrate 0.05–0.10 gm. to 70 c.c. ($\frac{3}{4}$–1½ gr. to 2½ fl. oz.); or by ordering bismuth preparations (bismuth subnitrate, bismutose, dermatol, xeroform) 0.2 to 0.5 gm. (3–8 gr.) every two or three hours; or almond mixture 0.5–1–2 gm. to 100 c.c. (8–15–30 gr. to 3 fl. oz.), one teaspoonful every hour; or ichthoform 0.25–0.50 gm. (4–8 gr.), in oatmeal porridge or cocoa, three or four times a day, or in a solution of 2 gm. to 100 c.c. (30 gr. to 3 fl. oz.), one teaspoonful every three hours. As in all other intestinal diseases, the diet plays an important part in enteritis. At the beginning of the disease in artificially-fed infants milk in any form must be withheld for twelve or twenty-four hours, cold water, tea or albumin water in teaspoonful doses being given instead. As soon as the stools begin to diminish in number and quantity the child may be cautiously put back on its regular diet of breast milk or cows' milk, except that at first the intervals should be longer than usual. In some cases, when milk is not well borne in any degree of dilution, it is permissible to give thickened decoctions of Kufeke's, Loeflund's, or Odda's food, one tablespoonful to fifteen or twenty tablespoonfuls of water, stirred up and well boiled, and later to add milk in slowly increasing quantities to these foods. Excellent results are obtained in colitis by the administration of Liebig's soup (see FEEDING,

ARTIFICIAL) diluted with equal parts of water, cocoa, acorn-cocoa, or acorn-coffee; or Hell's dry extract for the preparation of Liebig's soup may be used instead of the original prescription. This is first mixed with water only, and later with a gradually increasing quantity of milk (beginning with a large knife-point per meal the quantity is gradually increased until from two to three teaspoonfuls are added to the mixture for each feeding). Liebig-Keller's malt soup is also recommended: this is prepared as follows: 100 gm. (3 oz.) of an alkaline malt extract (Loeflund) is dissolved in ⅔ of a liter (quart) of water at 50–60° R. (144.5–167° F.). At the same time 50 gm. (1½ oz.) of fine white flour are stirred up in ⅓ of a liter (quart) of milk, poured through a coarse-meshed sieve, added to the malt extract, and the mixture brought to a boil.

The *complications* produced by the disease require appropriate treatment. Owing to the anemia which develops during convalescence iron preparations are indicated, and in view of the constipation which follows, mild laxatives, enemas, and, if necessary, a three to four weeks' drinking-cure with Carlsbad Mühlbrunnen, 3 to 5 tablespoonfuls a day.

Enteritis, Membranous.—This form occurs in older children and consists in the discharge of membranous or cylindrical masses of mucus and fibrin, which often produce violent tenesmus and colic (mucous colic). The condition is due either to the presence of large, hard masses of feces or depends on nervous excitement, especially in hysterical and neurasthenic subjects.

The characteristic discharges often accompany or follow a defecation; more rarely the membranous masses are discharged independently, and on superficial inspection may be confused with the proglottides of tapeworms or with nematodes. The condition is often obstinate and protracted and causes spasm of the anus (tenesmus), colic, and marked constitutional disturbance.

In the presence of fecal accumulations, the *treatment* consists in securing a daily evacuation by means of irrigation or

laxatives. Children with neuropathic tendencies require appropriate treatment.

During the attacks of colic warm compresses, baths, and opium enemata or suppositories are indicated. The croupous-diphtheritic form of the inflammation (**enteritis crouposa diphtheritica**), which is rarely observed in children, should also be mentioned; it occurs in dysentery, pyemia, variola, scarlet fever, typhus, and diphtheria.

Gastro-intestinal Diseases of Later Childhood.—Acute Catarrh of the Stomach (*Acute Gastritis*).—While acute catarrh confined to the stomach is rare in infants, it is observed quite frequently in older children.

The *pathologic findings* consist in swelling and redness of the mucous membrane, with large quantities of tenacious mucus containing numerous micro-organisms and desquamated cells.

Primary gastric catarrh in the great majority of cases is *caused* by an error in diet, and often begins suddenly with violent *symptoms*, such as high fever, delirium, lassitude and headache, frequent yawning, and, in children with a neuropathic taint, convulsions. Often, however, the only symptoms are retching and vomiting, preceded by nausea and copious salivation. The vomited matter consists at first of food remains and later of bile-tinged mucus; the vomiting is repeated every time the child takes food. Sometimes a peculiar form of dyspnea (dyspeptic asthma), associated with cyanosis, sweating, small pulse, and coldness of the hands, is observed, especially before an attack of vomiting; its cause cannot be determined (auto-intoxication?).

The tongue is coated, the odor of the breath sour, thirst is increased, the urine is scanty and rich in uric acid salts. Sometimes herpes labialis appears during the first days of the disease. The abdomen is distended and sensitive to pressure in the region of the pylorus, the stools are either constipated or diarrheic, and in the latter case offensive. The child often complains of periodic attacks of pain in the stomach.

Secondary gastric catarrh occurs as a concomitant of

various infectious diseases or as the result of improper feeding during the period of convalescence from various diseases.

The *prognosis* of acute gastritis is in most cases favorable. If improper feeding is persisted in or repeated, relapses may take place or chronic gastric or gastro-intestinal catarrh may develop.

Treatment.—The sovereign remedy, especially in those cases in which the laws of health have been grossly violated in the matter of diet, or there is reason to suspect the presence of some toxic material, is lavage (see LAVAGE, GASTRIC). If the obstacles to this mode of treatment are insuperable, the stomach should be relieved of its contents by means of an emetic, or by ordering the patient to drink large quantities of lukewarm water and then tickling the palate to induce vomiting, or by administering calomel, in doses of 0.02–0.05 to 0.10 gm. (⅓–¾ to 1½ gr.), every hour until the effect is produced, or a tablespoonful of castor oil. After the contents of the stomach have been removed, the patient must be put on a restricted diet consisting of light broths (bouillon), prepared from chicken or from beef free from fat, thin soup and milk with tea in small quantities, until there are unmistakable signs of hunger and the fever has disappeared.

The patient may then be permitted to go on a diet of milk, cocoa, malt-coffee, toasted white bread, zwieback, thick soups, milk dishes, and later on a mild meat diet consisting at first of cold chicken and chopped ham. To relieve the intense thirst, water or a slightly carbonated mineral water is administered. Violent vomiting or the desire to vomit can be controlled by giving mouthfuls of soda water or ice-pills.

When the stomach is very sensitive, a cold compress or a Priessnitz compress is applied to the epigastric region.

High fever is controlled by means of wet packs, and if constipation is present at the beginning or during the course of the disease, laxatives must be given, such as hydromel infantum 1 to 2 tablespoonfuls; or a mixture of Vienna draught 30 to 40 c.c. (1–1½ fl. oz.), syrup of raspberry 15 c.c.

(½ fl. oz.), cherry-laurel water 10 to 20 drops (one-half the quantity at once, and, if after two hours no effect has been produced, the other half); or syrup of rhubarb 2 to 3 teaspoonfuls, essence of tamarind (Dallman) 1 tablespoonful, ½ to 1 tamar indien pastil, or 10 to 20 drops of extract of cascara. The constipation may also be combated by means of intestinal irrigation.

In addition one of the following may be prescribed: dilute muriatic acid 10 to 20 drops to 100 c.c. (3 fl. oz.) with syrup of raspberry 10 c.c. (2½ fl. dr.); or tartaric acid 1–2 gm. to 100 c.c. (15–30 gr. to 3 fl. oz.); or dilute phosphoric acid in the same dose, one dessertspoonful every two hours; or tincture of rhubarb, two to three teaspoonfuls daily.

Chronic Gastric Catarrh.—The mucous membrane in this disease is in a condition of chronic catarrh manifesting itself in the formation of folds and pigmentation, changes in the glandular tubes, thickening of the muscular layer, redness, and the secretion of a tenacious, glairy mucus. Sometimes small ecchymoses and erosions in the mucous membrane are produced. If the process is protracted, atrophy of the mucous membrane and glands, partial and general hypertrophy of the muscular layer, and dilatation of the stomach develop.

Chronic gastric catarrh is usually due to a long course of improper feeding and to frequent digestive disturbances. The condition is accordingly observed in many constitutional diseases, such as anemia, chlorosis, scrofula, rachitis, and tuberculosis; in the form of a congestive catarrh in diseases of the heart and liver; and as the result of sluggishness or reduction of the gastric function secondary to some other disease.

The appetite is often diminished and there may be perverse cravings for various articles of food. The abdomen, especially in the epigastric region, is distended from the presence of gas and often sensitive to pressure; the patients emaciate and become anemic; their psychic nature becomes changed (auto-intoxication), and they complain of headache and vertigo and do not sleep well.

The tongue is usually coated, the odor of the breath acid, there is much belching of gas, which may have an offensive

odor, or there may be vomiting of mucous material. The bowels are usually constipated, or constipation may alternate with diarrhea.

The *prognosis* is not, as a rule, unfavorable, and in many cases depends upon whether the existing constitutional anomaly can be corrected or not. But in many cases the stomach remains sensitive for some time, and the patient is continually predisposed to a recurrence of the condition.

The *treatment* should take account of the above-mentioned causes. Above all, great care in the selection of the diet is indicated. It should be a *mixed diet*, consisting of easily digestible articles containing but little fat and starch, and the food should be given in small quantities and at frequent intervals. Large quantities of fluid are to be avoided, and although milk, or milk diluted with tea, cocoa or malt-coffee, sour milk or kefir (No. I. or II.) should be given, it is best to order these liquid preparations, as well as soups, to be given in not too large a quantity and at rather shorter intervals. In other respects the diet must be adapted to the age and to the subjective symptoms. Light and, later, dark meat, either scraped or chopped, finely divided green vegetables, rice, potato purée, stewed fruit from which the skin and seeds have been removed, and light biscuit may be allowed.

The treatment of chronic gastric catarrh may be materially supplemented by the use of Carlsbad, Mülhbrunnen or Schlossbrunnen, Vichy or Ems water, or Wiesbaden Kochsalzbrunnen.

These mineral waters may also be used for lavage, from 50 to 100 c.c. (1½–3 fl. oz.) being introduced and allowed to escape until the fluid returns clear. In most cases, however, it will suffice to prescribe a drinking-cure with one of these mineral waters of about two or three weeks' duration, from 50 to 100 c.c. (1½–3 fl. oz.) of the water being given at room-temperature or slightly warmer twice a day; that is, early in the morning on an empty stomach and in the afternoon three hours after dinner.

Internally, various disinfectants are given to minimize fermentation in the stomach, such as resublimated resorcin

0.2–1 gm. to 100 c.c. (3–15 gr. to 3 fl. oz.), to which may be added dilute muriatic acid 10 to 20 drops; sodium benzoate 1–2 gm. to 100 c.c. (15–30 gr. to 3 fl. oz.), one teaspoonful every hour; or creosote 1 gm. (15 gr.), dilute spirits 8 c.c. (2 fl. dr.), cognac 2 c.c. (½ fl. dr.), 10 drops three times a day; or creosote 2 c.c. (½ fl. dr.), brandy 20 c.c. (5 fl. dr.), wine of rhubarb 10 c.c. (2½ fl. dr.), 10 drops in sweetened water three to five times a day; or ichthalbin 0.15–0.50 gm. (2–7½ gr.), three times a day before meals; bismutose, a small knife-point three or four times a day; or menthol 0.10 gm. (1½ gr.), tincture of orange 15 c.c. (½ fl. oz.), 5 drops three times a day after meals.

A favorable influence may be exerted on the course of a chronic gastric catarrh by means of hydropathic procedures, such as a Priessnitz compress during the night, slapping the epigastric region with cloths, Scotch douches, and by massage and gymnastic exercises.

If the anorexia continues, bitter stomachics should be ordered. Of the newer preparations of this class the following deserve mention: gastromyxin 0.10 to 0.50 c.c. (1½–7½ min.) three times a day; decoction of condurango 5–10 gm. to 100 c.c. (1–2½ dr. to 3 fl. oz.), one dessertspoonful before the meal; fluidextract of condurango (Immermann), 10 to 15 drops three times a day; orexin tannate 0.2 to 0.5 gm. (3–7½ gr.), or in the form of chocolate tablets, one-half hour before meals; or extract of quinin (Nanning), 10 drops before meals; wine of rhubarb 100 c.c. (3 fl. oz.) with extract of condurango 10 c.c. (2½ fl. dr.), one teaspoonful once or twice a day. Constipation calls for the administration of a mild laxative.

Gastro-intestinal Hemorrhage in Infants. See Melæna Neonatorum.

Geographical Tongue. See Tongue, Geographical.

German Measles. See Rötheln.

Giantism or Gigantism. This condition is caused either

by changes in the pituitary body or possibly in the thymus gland. It is either congenital or acquired and gradually leads to hypertrophy of individual portions of the body (see Figs. 48, 49).

The congenital cases are characterized, in addition to the abnormal development of individual members, by other de-

FIG. 48.—Infant, eight months old, with congenital elephantiasis and partial gigantism of both feet; the former caused by lymphangiomata, angiomata, fibromata, and lipomata.

FIG. 49.—Congenital elephantiasis and partial gigantism (of the feet) in an infant ten months old.

formities, and by lipomatous neoplasms, which either are congenital or develop soon after birth. The abnormal growth is accompanied by thickening of the skin and disturbances of the circulation, caused by vascular alteration, which lead to livid discoloration of the thickened skin, changes typically observed in elephantiasis. In some cases the admin-

istration of hypophysin tablets (Wellcome) may do good; if this remedy fails, the hypertrophied parts should whenever possible be removed by the knife. In the case of monsters there is absolutely no hope for improvement.

Gland Tuberculosis. See BRONCHIAL-GLAND DISEASE.

Glandular Fever.—In view of the fact that a number of identical cases characterized by glandular enlargements often make their appearance together, the condition is regarded as a disease *sui generis*, due to some unknown infection, to which the name glandular fever (Drüsenfieber) has been given by Pfeiffer. The prodromal *symptoms* resemble those of influenza, and the disease usually sets in with fever, sore throat with redness of the pharyngeal organs, and enlargement of the maxillary and cervical glands, first on one, and later on both sides of the neck. Occasionally, pain along the sternum and in the abdomen is complained of and is attributed to enlargement of the mediastinal and mesenteric glands. In rare cases splenic enlargement and temporary nephritis are superadded. When the disease runs its normal course, the fever disappears after a few days, while the glandular enlargement persists a little longer, but ceases to be painful and finally, after a time, disappears altogether. In severe cases the course is more protracted in every respect, but perfect recovery takes place without any complications. In about one-third of the cases suppuration of the glands takes place.

It is not possible to decide whether the glandular swelling is to be regarded as idiopathic or secondary to some inflammatory process in the mucous membrane of the nose, pharynx, or middle ear. During convalescence a general weakness is noticeable, which usually lasts for some time.

The *treatment* is directed against the most prominent symptoms, the fever and the glandular swelling. Sponging with cold water, wet packs, or antipyretics as in influenza, and compresses wrung out of lead water, dilute aluminum acetate, or alsol (1 : 100 parts of water) usually suffice to control this benign malady.

Glandular Inflammation. See LYMPHADENITIS.

Goiter. See STRUMA.

Goiter, Exophthalmic (*Basedow's*, *Graves'*, or *Parry's Disease*).—This disease occurs rarely in children, and presents the same *clinical phenomena* as the adult form. Tachycardia and a feeling of lassitude with thyroid tumor are the most noticeable symptoms. Exophthalmic goiter rarely becomes as marked as in adults, and the other signs affecting the lids and the accommodation are rarely seen in children. Intestinal symptoms, especially profuse diarrhea, are more frequent.

The *course* of exophthalmic goiter is protracted and is interrupted from time to time by cessation or involution of the pathologic process. Severe cases may end fatally from cardiac weakness or some other complicating disease.

The *treatment* consists in physical as well as psychic rest, invigorating diet, and the administration of iron or arsenic preparations to improve the strength.

In many cases galvanization or faradization of the cervical sympathetic has a favorable effect on the symptoms, especially the tachycardia. Occasionally the cautious use of thyroidin tablets has been successful.

[Thyreoidectin, an anti-body derived from the blood of animals previously deprived of the thyroid gland, has been recently introduced and has given most remarkable results in adult cases, as shown by its influence on the tachycardia, general nervous symptoms, and exophthalmos, and by the increase in the appetite and weight.—ED.]

If the cardiac phenomena are more prominent, digitalis or tincture of strophanthus must be given. During conditions of psychic excitement resort must be had to sodium bromid and protracted lukewarm baths.

Granuloma Umbilici. See UMBILICUS, DISEASES OF.

Graves' Disease. See GOITER, EXOPHTHALMIC.

Green-sickness. See CHLOROSIS.

Grip. See INFLUENZA.

Growing-pains.—In rapidly-growing children, especially girls during the age of puberty, weakness and stiffness and pains in the muscles, temporarily increased by movement, are occasionally observed. Sometimes the pain assumes a neuralgic character and in rare cases the joints are involved. One is not infrequently inclined to regard the pain as rheumatic or as due to disturbances of nutrition and anemia.

According to Hansen auto-intoxication through the intestinal tract plays an important part in the production of these so-called growing-pains, and the accompanying anemia is, therefore, only of secondary significance.

According to this view intestinal antiseptics, such as salol, naphthol, creosotal, menthol and guaiacol preparations would be indicated in addition to laxatives.

In addition to these remedies, bodily and mental rest should be insisted upon and the hygienic surroundings improved as much as possible.

[The frequent insignificance of true rheumatic pain in the joints and muscles of children would warrant a tentative diagnosis of acute rheumatism in such cases as are described above; at least, until proper antirheumatic treatment has been followed by no relief. This is all the more important, since a true rheumatic endocarditis is frequently encountered in children in the wake of the most insignificant and evanescent joint-pains.—ED.]

Growth.—During the first year the child grows about 20 cm.; during the second year, about 10 cm.; during the third year, about 7 cm.; and after the fourth year of life, from 4 to 5 cm. every year. This rate of growth continues until the fourteenth year of life. Boys grow taller on the average than girls. At the end of the fifteenth year a boy's height is, on the average, 150 cm. The stature at different ages is shown in the following table:

In the newborn	50 cm.
At the end of the first year	70 "
" " second year	80 "
" " third year	87 "
" " fifth year	96 "
" " seventh year	105 "
" " ninth year	115 "
" " twelfth year	130 "
" " fifteenth year	150 "

The circumference of the chest also increases in proportion to the increase in length. The average circumference of the chest as obtained from a large number of measurements is as follows:

In the newborn	34 to 35 cm.
At the end of the third year	56 "
" " fifth year	60 "
" " tenth year	65 "
" " fourteenth year	72 "
" " fifteenth year	75 "

In a normally developed body there is a certain definite relation between the circumference of the chest and the height. Up to the fifth year of age the number that represents the chest measurement should exceed by at least 12 the number corresponding to one-half the length of the body; or, to give an example: If a child measures 88 cm. at the end of its third year, the chest measurement under normal conditions should be equivalent to one-half of the length of the body + 12 cm.—*i. e.*, 88 ÷ 2 = 44, 44 + 12 = 56 cm. Between the fifth and tenth year of life the chest measurement should be about 10 cm. more than one-half of the length of the body. In the tenth year of life the circumference of the chest exceeds one-half the length of the body by only 4 to 5 cm., and at the end of the fifteenth year of life the two should be exactly alike.

During the child's development, if the relation between the length of the body and the circumference of the chest exhibit marked deviations to the detriment of the chest measurement, it should be heeded as a warning that great care and strict supervision are necessary. A narrow thorax

with great length of body is not a favorable sign for the child's future health.

A comparison of the increase in the size of the head as compared with that of the thorax is also of some importance in children, especially during the very first years of life.

The circumference of the head is determined by passing a tape-measure around the child's head at about the middle of the forehead, above the ears. The breast measurement is determined by passing the tape-measure around the entire thorax at the line of greatest curvature of the thoracic cage. It is found that the circumference of the chest taken under the axillæ in the infant is almost identical with the circumference of the head. If the development of the bones is not interfered with and the infant continues to increase at a normal rate, this relation remains practically the same during the entire first year. At the end of the first year, however, the circumference of the head must not exceed that of the chest. After the end of the first year the circumference of the chest increases much more rapidly than that of the head. Hence, if the chest measurement fails to increase at the same rate as the circumference of the head, it is a positive sign of some disturbance in the development of the thorax, and, in fact, it is very frequently the first sign, recognizable even by the layman, that the child is suffering from rachitis. If an excessively rapid increase in the size of the head is determined at the same time, one has to deal usually with rachitis of the head and hydrocephalus, causing a pathologically diminished hardness of the cranial bones and separation of the sutures.

Hardening.—Systematic hardening of the body, if adapted to the child's age and constitution, aims to develop in the juvenile organism the resistance necessary to protect it against injurious external influences. This is attained by the suitable employment of the effects of water and air and by the selection of suitable clothing.

Ablution for purposes of hardening should not be employed before the second year of life, and then should be

begun only during the milder seasons of the year. It must always be remembered that many children, especially the anemic, weakly, and nervous, do not safely tolerate the abstraction of heat, and that the strictest individualization is necessary when beginning a course of hardening. This refers not only to the temperature of the water, but also to the selection of the procedures to be employed. For such children the ablutions must at first be made with warm water at from 15° to 20° R. (66°–77° F.) and the temperature gradually reduced down to that of cool well-water. The bath is given once a day; in the morning, first with a sponge, and then, after the child has become accustomed to the manipulation, with a wet linen cloth. After every kind of ablution, which must not last more than from two to three minutes, the child's body must be rubbed with a dry cloth until the skin is red and the peripheral portions of the body have become warm. The daily use of douches or cool affusions is to be avoided. Under certain circumstances, which it is important to recognize, partial ablutions must be used at first instead of general ablutions, especially in the case of anemic or excitable children, because they react more vigorously to a general abstraction of heat. The child remains in bed during the procedure, and each portion of the body as it is washed is covered with a blanket until it is warm, or rubbed with French brandy. The ablution should be given only in the morning and in a moderately warmed or even in an unheated room. After the ablution the child should be sent out into the open air as soon as possible ; and if that is not feasible on account of bad weather, it should be made to exercise for at least half an hour in a room with the windows open (room gymnastics). A thorough course of hardening, however, requires much more time than this spent in the open air. The child should be kept out of doors as long as possible; but in this connection it is of the greatest importance under certain circumstances to reduce fatigue to a minimum by avoiding too much bodily exercise.

The clothing is an important factor in the process of hardening. While it should always be adapted to the season, it

must never be excessive; the neck must be free, the trunk not too warmly clad, and the clothing must not fit so snugly as to interfere with respiration. The abdomen, on the other hand, and the legs and feet must be warmly covered. If some such system as is here outlined is adopted and faithfully adhered to, with due regard to individual requirements, the desired result will be attained.

Febrile diseases are an indication for discontinuing the cold rubs, and when they are resumed tepid water must at first be used. Chronic catarrhal conditions of the respiratory or digestive organs and rachitis or scrofulosis are not contra-indications to the employment of hardening procedures.

Headache (*Cephalalgia; Hemicrania; Migraine*).—Periodically occurring attacks of headache, usually unilateral, are sometimes hereditary or, without this predisposition, are found in nervous children and in children suffering from some disease of the nasopharyngeal space (adenoid vegetations), visual disturbances, or sluggishness of the digestive organs. Usually at the beginning or during the attack, which often lasts only a few hours, gastric symptoms consisting in nausea or even vomiting are superadded. Sometimes the attack is preceded or accompanied by the symptom usually described as dark spots before the eyes ("Flimmerskotom") representing a variety of disturbances of the visual field.

As a rule, the attack is accompanied by excessive sensitiveness to light (dilated pupils), subjective auditory and olfactory disturbances, and hyperemia or pallor of the face.

In severe cases migraine appears to begin very early in life; but, as a rule, it is met in children of a school-going age, the female sex being predisposed, particularly during the period of development.

Although the *prognosis* of migraine is generally favorable, in so far as it disappears in the course of years or decades, cases occur in which the malady persists in a more or less intense form until advanced old age.

The *treatment* of hemicrania consists, in the first place, in

the removal of any causes that may be discovered. Diseases of the nasal cavity, disturbances of accommodation, anemia or chlorosis, and intestinal disturbances, especially constipation, must receive due attention and appropriate treatment.

Hardening procedures, sports, amusements, and exercise in the open air should be encouraged and the mental activities curtailed in the effort to improve the general health. Too nourishing a diet, as well as alcoholic beverages, are to be avoided. During the attack the patient should remain perfectly quiet in a darkened room. Sometimes a cold compress to, or wrapping, the head in silken or woolen cloths is useful. When the face is congested, hot hand- or foot-baths are effective; when pale and cold, an alcoholic drink or black coffee is indicated, and the body should be warmly wrapped up.

The attack itself can usually be successfully combated with pyramidon, phenacetin, antipyrin or caffein, or antipyrinum caff. citr. (Migränin), 0.10 to 0.50 gm. (1½–7 gr.) to the dose for each year of the child's age. [Maximum dose rather large.—ED.]

During the intervals of freedom iron, arsenic, or quinin preparations must be prescribed. Hydrotherapeutic cures are often followed by the most satisfactory results.

Heart, Diseases of.—Diseases of the heart, whether of the pericardium, myocardium, or endocardium, are very rarely primary, the cause being usually found in some other disease, particularly acute articular rheumatism and other infectious disorders. Among the latter scarlet fever and diphtheria are chiefly to be mentioned, as they very frequently lead to very grave disease of the heart.

1. **Endocarditis** is the most frequent form of heart disease among children as well as among adults. As already mentioned, this disease is usually secondary and due to infection with various staphylococci and streptococci, but more rarely it may be primary in the verrucous form. It chiefly attacks the valves of the heart. The granulation tissue which forms on the valves later leads to the production of cicatricial thickening, with consecutive fibrous changes and shortening

of the valvular apparatus. In ulcerative endocarditis, which is rare in childhood and usually follows some grave septic process, purulent, disintegrating ulcers form on the valves and even in the myocardium and may lead to metastasis elsewhere in the body.

When the disease does not affect the heart valves, the *diagnosis* can be made only by the secondary dilatation with consecutive incompetency of the valves, especially the mitral; but when the morbid process attacks the valves themselves, the characteristic changes in the heart sounds soon become evident. The sounds become impure, and a systolic or diastolic blow or murmur is heard, with arhythmia and acceleration of the pulse. Gradually there develop, in addition to these auscultatory changes, the clinical phenomena of enlargement of the cardiac dulness, displacement of the apex beat to the left beyond the nipple line, and extension of the cardiac impulse over the fifth and sixth intercostal spaces, which is caused by the secondary dilatation and hypertrophy.

The onset of the endocarditic process may be abrupt with violent *symptoms*, such as high fever, pain in the region of the heart or epigastrium, dyspnea, and general restlessness; or the disease runs an insidious course with slight elevations of temperature, usually occurring in the evening. In the latter case the cardiac disease may readily be overlooked by the physician, because even older children rarely make any statements pointing to any connection of their ailment with the heart. The child shows lassitude and avoids all unnecessary movement; there is often a marked change in the color of the face, sleep is broken, and vague pains are complained of, which are usually not referred to the cardiac region, but much more frequently to some other region of the chest or abdomen, especially the umbilical region.

The *diagnosis* of endocarditis is possible only when the above-mentioned auscultatory phenomena in the valves of the heart, especially the mitral, and the changes in the pulse can be demonstrated.

Sometimes endocarditis runs its course without leaving any sequelæ, but in most cases a permanent valvular defect

remains. Aside from metastatic diseases which may accompany endocarditis, the disease is often complicated by chorea, symptoms of which may, however, precede the endocarditis (see CHOREA).

The sequelæ of the attack of endocarditis itself, or of the relapse which not infrequently takes place, lead in most cases to early death.

The most frequent *results* of endocarditis are, as has been mentioned, valvular lesions, and in the case of children especially disease of the mitral valve. When there is merely insufficiency of the valve, a systolic murmur will be heard, most marked at the apex; and on percussion, dilatation and hypertrophy of the left, and later also of the right ventricle, with accentuation of the second pulmonary sound, can be demonstrated. If mitral stenosis is also present, a diastolic murmur also will be heard.

The results of mitral insufficiency manifest themselves quite early. The children become anemic and dyspneic, often complain of pain in the precordial region or of palpitation, especially after the slightest exertion, and a thrill can be felt at the mitral area. The condition remains latent for some time, or a change for the worse soon manifests itself, often without any marked rise of temperature, by an increase in the above-mentioned symptoms, due to a rupture of compensation. The dyspnea increases, so that the child can breathe only in a half-sitting posture; the face and the visible mucous membranes become cyanotic; there are violent paroxysms of cough, and, owing to the congestion, painful enlargement of the liver and spleen and dropsical effusions into the peritoneal and pleural cavities take place. The urine is now diminished in quantity and concentrated, and sometimes contains albumin.

These grave symptoms, which frequently threaten the patient's life, may recur at frequent intervals, until, finally, after repeated exacerbations brought on by ruptured compensation and the increasing weakness of the heart, death occurs with the appearance of pulmonary or cerebral edema and general dropsy.

In many cases the subjective symptoms of a cardiac lesion are practically altogether absent, and the child and his attendants are made to realize the existence of a grave disease only by the necessity of observing the precautions which must be insisted upon in all such cases.

Ulcerative endocarditis, which is relatively rare in childhood, runs a violent course from the outset. The elevation of temperature is not marked, but the pulse is exceedingly small (gallop-rhythm) and the disease manifests itself chiefly by the accompanying septic phenomena and the marked constitutional disturbance.

The *prognosis* of endocarditis depends in part on the character of the disease and the pathologic changes to which it has given rise. The changes produced in the valves, as has been stated, may for some time fail to produce any symptoms other than a very slight disturbance of the general health. When frequent relapses take place and rupture of compensation develops relatively early, the prognosis, which is always doubtful, becomes still more grave.

The prognosis of cardiac lesions following acute endocarditis also depends upon whether and to what extent the inflammation gradually involves the heart muscle; the weakening of the muscle produced by the disease in the first place prevents complete recovery of function, and is also one of the chief factors in the production of rupture of compensation and insufficiency.

In the *treatment* of endocarditis rest in bed is absolutely imperative and must be insisted upon long after convalescence has begun. Locally, an ice-compress, ice-bag, or Leiter's coil may be applied to the precordia. The chief indication is to maintain the strength of the heart, and, when it begins to fail, when the pulse becomes weak and very frequent, to administer alcoholic stimulants in the form of wine or champagne, in teaspoonful doses, or some of the following: aromatic spirit of ammonia, spirit of ether, or acetic ether in drop doses; camphor 0.03 to 0.1 gm. ($\frac{1}{2}$–$1\frac{1}{2}$ gr.) with sugar, one powder every hour or every two hours; or camphor 0.5 gm. ($7\frac{1}{2}$ gr.), gum mixture 100 c.c. (3 fl. oz.), white sugar

15 gm. (½ oz.), one teaspoonful every hour. Camphor may also be given in combination with digitalis; for example, powdered digitalis leaves 0.05 gm. (¾ gr.) with camphor 0.05 gm. (¾ gr.), one powder three or four times a day.

Digitalis, however, occupies the first place as a heart tonic. It is most advantageously prescribed in the form of the infusion 0.10–0.25 gm. to 80 c.c. (1½–4 gr. to 2½ fl. oz.), one or two teaspoonfuls every two or three hours for several days, and sometimes continued for some days longer in descending doses.

When the remedy is not well borne by the stomach, a considerably weaker solution cooled with ice may be tried, and, if necessary, may be given per rectum in the form of a clyster or suppository.

Next in importance as a heart tonic is tincture of strophanthus. To children over five years of age: tincture of strophanthus 0.5 c.c. (8 min.), syrup of orange 20 c.c. (5 fl. dr.), water 150 c.c. (4¾ fl. oz.), one dessertspoonful every two hours; or tincture of strophanthus, tincture of valerian, each, 10 c.c. (2½ fl. dr.), five drops three times a day.

Third in importance is caffein. This drug acts very differently in different individuals, and must, therefore, be withdrawn at once if it is followed by insomnia. It is specially recommended in cases with diminished pulse tension and already existing asystole. The double salts, caffeine and sodium benzoate or caffein and sodium salicylate, in the dose of 0.3 to 0.5 gm. (4½–7½ gr.) per day in solution, are usually selected, because administration in powder form is not always well borne. Caffein may also be added to the digitalis infusion.

Quinin also has a sedative effect when the heart is excited and accelerated, and accordingly the hydrochlorate, in the dose of 0.5 to 1 gm. (7½–15 gr.) per diem, alone or with digitalis or caffein, is given.

When the tachycardia is especially severe and in the presence of pain in the region of the chest, the bromids, in doses of 1 to 2 gm. (15–30 gr.) per diem, may be added.

Potassium or sodium iodid during the stage of improve-

ment has been recommended by a number of authorities. [Iodin-vasogen or iodin-petrogen administered by inunction is especially suitable for children, as it prevents disturbance of the digestion. Whatever preparation may be chosen, the influence of iodin should be continued for a considerable period, with the hope of minimizing the extent of inflammatory changes in the valves.—ED.]

The *diet* should be liquid, such as milk, sometimes coffee prepared from beans, nourishing soups containing the yolk of egg, "*chaudeau*," "Milchcreme," aspik, and essence of chicken or beef.

In cases due to articular rheumatism, sodium salicylate or aspirin 2 to 5 gm. (30–75 gr.) to 100 c.c. (3 fl. oz.), one teaspoonful every two or three hours, should be administered during the beginning of the disease. In pyemic forms of endocarditis inunctions of the precordial region with Credé's ointment several times a day should be added to the usual tonic treatment.

When there is excessive bodily unrest and insomnia it may become necessary to give sedatives in addition to the stimulants. In this case opium suppositories, 0.005 to 0.01 gm. ($\frac{1}{13}$–$\frac{1}{7}$ gr.) each, or enemas containing chloral hydrate 0.25 to 0.50 gm. (4–7½ gr.), are sometimes indicated.

After convalescence has been established it is important to regulate the patient's mode of life as regards diet and hygiene. In the first place, the diet should consist of light, easily digestible albuminous foods, and the meals should be small in quantity and frequent. Milk, dishes prepared with milk, light custards, soft-boiled eggs, light meat dishes, and vegetables may be allowed. Coffee or tea, as well as alcoholic beverages, must be forbidden.

As regards the hygiene, frequent rest during the day must be insisted upon, and the desire for active exercise, which is always great in children, must be curbed as much as possible.

The catarrhal diseases of the digestive apparatus which are the result of disturbance of compensation require appropriate treatment. The enlargement of the liver from congestion gives rise to pain, which may be controlled by means of

cold compresses or rubbing with menthol-chloroform or spirits of menthol, 1 : 10; or equal parts of oil of hyoscyamus and chloroform.

As the child grows older indulgence in every form of athletic exercise must be discouraged, bicycling, riding, and tennis-playing being absolutely forbidden, while dancing, swimming, and gymnastics may be permitted only under suitable supervision, precluding any possibility of excess. The various movements which are performed in Örtel's method of "Terrainkur" (graduated walking exercises and hill-climbing) are of distinct value.

Any child suffering from the effects of endocarditis must be protected against psychic excitement; hence severity on the part of teachers and every form of excitement must be avoided, and any mental overexertion in study guarded against. In fact, whenever possible, the attending physician should insist on the child being taken out of school and receiving private instruction. Lukewarm baths may be given; cool or cold baths are permissible only as the child grows older, and even then must be of brief duration. Carbon dioxid baths, particularly at Nauheim, Franzensbad, Marienbad, or Königswart, are especially recommended. In view of the danger of a renewed attack of articular rheumatism bringing on a return of the cardiac affection, the house should be dry, with a southern exposure, and the child must be provided with warm, suitable clothing, and not be sent to places where the dew is heavy. Relapses require the same therapeutic measures as the primary disease.

2. Pericarditis.—Rarely primary, this disease usually develops by contiguity in acute or chronic diseases of neighboring organs, or is caused by various infectious diseases. Just as in the case of pleuritis, the condition may merely represent a hyperemia (*pericarditis sicca*), or an exudate may be formed which may be fibrinous, hemorrhagic, serous, purulent, or even ichorous. When the exudate subsides a cicatricial wheal remains and may become the starting-point of dense adhesions between the visceral and parietal layers of the pericardium (*concretio pericardii*). In almost every case of inflammatory

disease of the pericardium the myocardium is also involved and becomes the seat either of acute inflammation or of fatty degeneration of the muscle.

The *clinical symptoms* of the disease are the same as those of endo- and myocarditis. Sometimes a friction-sound is heard over the heart at the beginning of the disease; this, however, disappears as the exudate increases in quantity.

A constantly increasing cardiac dulness, of triangular shape, with the elongated base below, and the advent of the important clinical symptoms, such as feeble heart-sounds, an apex beat that is hardly visible or palpable, increasing unrest attended by fever, dyspnea and cyanosis, and pain in the cardiac region, establish the diagnosis of pericarditis beyond a doubt.

As the exudate increases, a bulging of the left half of the thorax becomes visible, and the accompanying clinical symptoms become more marked. When the effusion is very large, death may take place from sudden cardiac paralysis and pulmonary edema.

When the exudate is gradually absorbed, the area of dulness diminishes more and more, and at the same time the attending phenomena, dyspnea and cyanosis, subside; friction-sounds become more and more distinct and may, under certain circumstances, persist for some time.

If the plastic exudate undergoes organization and produces an adherent pericarditis (concretio pericardii), the condition manifests itself by a diffuse systolic retraction of the intercostal space at the position of the apex beat.

The *prognosis* of pericarditis, whether primary or complicated by some other disease, is always grave.

The *treatment* consists in absolute rest and measures to allay the inflammation, such as the application of ice-bags, ice-compresses, or Leiter's coil. Internally, if the heart action is rapid, infusion of the leaves of digitalis 0.2 to 0.3 gm. in 80 c.c. (3–4½ gr. in 2½ fl. oz.), or tincture of strophanthus for children over five years of age, 6 to 12 drops per day, should be prescribed. If the strength of the heart fails, stimulants must be given (see ENDOCARDITIS).

The protracted presence of an effusion in the pericardium calls for the administration of diuretics, among which may be specially recommended potassium acetate 2–5 gm. to 100 c.c. (30–75 gr. to 3 fl. oz.), oxymel of squill or syrup of juniper, 1 teaspoonful every three hours, caffein natriobenzoate, 0.2 to 0.5 gm. (3 to 7½ gr.) per diem, in powder or solution, or agurin in half these doses, 0.1 to 0.25 gm. (1½ to 4 gr.)

Externally, compresses wrung out of Haller Iodwasser may be recommended, or the precordia may be painted with 6 per cent. iodovasogen or equal parts of tincture of iodin and tincture of galls.

Throughout the course of the disease the diet should be light and such as has been described under the head of ENDOCARDITIS.

In those rare cases in which exudate persists for some time and the dyspnea and pain are evidently reducing the patient's strength, the exudate must be removed either by puncture or by incision of the pericardium.

3. **Myocarditis** (*Inflammation of the Heart Muscle*).—This disease is very rarely primary, being, on the contrary, usually a complication of peri- or endocarditis, especially of the ulcerative purulent form. Like these two diseases myocarditis is also caused by various infections, among which diphtheria and, more rarely, scarlet fever play a prominent rôle. The changes caused by the specific toxins manifest themselves pathologically in parenchymatous or interstitial inflammation, which may lead to diffuse or localized connective-tissue changes with muscular atrophy or fatty degeneration of the muscle fibers.

The *symptoms* of myocarditis consist particularly in weakening of the heart and softening and diminished tension of the pulse, which is accelerated in contrast to the body temperature, softer and more irregular, and later often exhibits the ominous gallop-rhythm.

The *sequelæ* of weakened heart action—increased restlessness, dyspnea, cyanosis, cerebral symptoms with convulsive twitchings or somnolence, and general edema—soon make their appearance.

The urine is scanty and usually contains albumin. Sometimes, after a severe toxic disease, as, for example, diphtheria, death takes place suddenly and may be brought on by the most insignificant movement on the part of the patient.

In the more chronic cases the above-mentioned symptoms slowly and gradually subside. Corresponding to the weakened heart action, the heart sounds are more feeble, and passive dilatation of the heart can be demonstrated by percussion.

The *treatment* of myocarditis is exactly the same as that of endocarditis. In view of the danger of a complicating myocarditis being present, heart stimulants should be given early in all infectious diseases, especially in diphtheria.

The *prognosis* should always be guarded, because even the mildest manifestations of myocarditic disease are sometimes followed by sudden death and the downfall of all our hopes of recovery in a given case.

During convalescence the greatest caution is necessary. As after recovery from endocarditis, rest in bed must be insisted upon until the pulse-frequency has been proportionate to the temperature for weeks and the pulse itself indicates that the heart muscle has regained its strength.

Heart tonics, such as Bestuscheff's ethereal tincture of chlorid of iron, 2 to 5 drops in one tablespoonful of sweetened water every three or four hours; camphor or caffein; and sometimes, in the case of children over five years of age, tincture of strophanthus, 6 to 12 drops three or four times a day, may be employed with advantage. Tincture of valerian and iron preparations are also useful.

After any severe disease and when convalescence is tardy, a sojourn in the mountains or at the seashore should be recommended during the summer, precautions being taken against too much exercise; while during the winter some warm resort on the coast may be advised.

4. **Hypertrophy and Dilatation of the Heart.**—Aside from congenital or acquired organic diseases of the heart and its valvular apparatus, there occurs during childhood, albeit rarely, dilatation with consecutive hypertrophy of the cardiac cham-

bers whenever signs of stasis are present in the circulation. The condition may also be congenital, as, for example, in congenital goiter. It develops particularly in chronic pneumonia, extensive pulmonary tuberculosis, struma, emphysema, asthma, in the presence of large pleural exudates, in diseases of the kidneys, and in whooping-cough with grave congestive symptoms. Dilatation alone is seen most frequently in anemia and chlorosis and in the acute infectious diseases.

In severe cases the cardiac changes are readily recognized clinically, and give rise to the symptoms of cardiac insufficiency which have been described in connection with endocarditis.

Although in many cases the dilatation and hypertrophy disappear as some of the causal conditions improve, they may, especially in debilitated, anemic, or chlorotic individuals, persist for some time and cause, in addition to permanent insufficiency, the condition known as "irritable heart."

The latter condition may also be the result merely of nutritive disturbances in anemic individuals during the age of puberty, without any antecedent disease.

The characteristic *symptoms* consist in irregularity of the pulse as regards force and frequency, a diffuse apex beat, and enlargement of the heart-dulness, which can be demonstrated by percussion.

As the result of the underlying causal conditions the patients differ from other children of the same age—they are usually tired, indolent, both physically and mentally, and complain of vertigo, headache, palpitation, stitch in the left side, and oppression, symptoms which often appear or become aggravated after the slightest bodily or mental exertion.

Treatment must be directed chiefly toward the *causal* conditions. Whatever may be the cause of the cardiac anomaly, bodily and mental rest, for as long a time as possible, is the most important factor in the treatment. Internally suitable remedies must be given; in the case of anemic and chlorotic children, iron and arsenic preparations are employed. During the attacks of palpitation, oppression, etc., absolute rest must

be prescribed, supplemented by the application of cold to the precordia and, internally, stimulants such as camphor 0.5 gm. (7½ gr.), gum mixture 150 c.c. (5 fl. oz.), one dessertspoonful every two hours; aromatic spirit of ammonia and spirit of ether, equal parts, 3 to 5 drops in sweetened water every hour; tincture of valerian, 5 to 10 drops every three hours; ethereal tincture of valerian or validol, up to 5 drops every three hours.

The *diet* must be nutritious, but must not include articles that produce flatulence. An attempt should be made to improve metabolism by sending the patient to some suitable resort at a moderate elevation or to the coast of the Adriatic.

5. **Heart Lesions, Congenital.**—As the result of arrested development or incomplete constriction of the embryonal heart-tube, or as the result of embryonal endocarditis and secondarily of malformation or atelectasis of the lungs, there is produced a variety of anomalies of the heart, affecting either its size or shape, and abnormalities of the septa, vascular trunks, orifices, and various valves. There can be no doubt that congenital heart disease is not always due to structural anomalies; it may be the result of an acute fetal endo- or myocarditis. The orifice of the pulmonary artery is most frequently affected, insufficiency being rarer than stenosis.

There are a great many varieties of congenital heart disease, but they practically interest only the pathologist. Clinically it is very often exceedingly difficult to interpret the signs that are found and to arrive at a correct diagnosis; many a diagnosis of the seat of a congenital cardiac anomaly rests solely on hypothesis. As a rule, very loud murmurs are heard in congenital heart disease. In transposition of the vessels the heart sounds are normal. The *diagnosis* of congenital heart disease is based chiefly on the following clinical phenomena:

As a rule the child is born in asphyxia and, owing to the more or less profound disturbance of the circulation, presents a variable degree of cyanosis or waxy pallor ("blue disease," especially in stenosis of the pulmonary artery). In severe

cases the signs of pulmonary atelectasis are present (see ATELECTASIS).

The respiration is short and superficial; occasionally there are paroxysms of cough, after which the cyanosis becomes deeper and the vitality, which is already lowered, is still further reduced; the cry has a muffled sound; the peripheral portions of the body are cool, and the temperature is subnormal. Loud murmurs are heard over the heart and even between the shoulder-blades; occasionally dilatation of the heart can be demonstrated by percussion.

Severe disturbance of the circulation when due to correspondingly grave cardiac lesions usually terminates in death. In the milder cases, in which compensation and habituation to the pathologic conditions develop, improvement may continue for years; but even in these cases there are intercurrent periods when the child is worse. At all events, the milder congenital heart lesions are better borne than the acquired, because the heart muscle usually remains intact for a longer time, as the valvular lesion is not attended by myocarditis.

As a rule, children with congenital heart disease are physically underdeveloped; they frequently present deformity of the thorax, and are more or less cyanotic and dyspneic—symptoms which are aggravated by any psychic or physical emotion.

The peripheral portions of the body are cool and clammy, and the terminal phalanges of the hands club-shaped. Violent paroxysms of cough with bloody expectoration are frequent, and still more frequent is epistaxis. Sooner or later, owing to cardiac weakness, symptoms of dropsy develop, to which pulmonary phthisis is sometimes superadded and hastens the fatal termination. In many cases of clinically undoubted congenital heart disease no visible disturbance whatever is present; but even in such cases the patient's life is always in jeopardy.

The *treatment* of congenital heart disease must be directed, first of all, against the asphyxia, which is already present at birth. Stimulating baths with cool affusions, dry rubbing of the body, artificial respiration, faradization of the diaphragm,

and cardiac stimulants, such as aromatic spirit of ammonia, spirit of ether, or acetic ether, given in drop doses every one-quarter to one-half hour, are the remedies to be employed.

Older children with congenital heart disease must be restrained from any form of bodily or mental overexertion. In fact, these unhappy creatures are condemned to the mode of life described under ACQUIRED HEART DISEASE.

6. **Heart Murmurs, Anemic.**—Anemic murmurs are rare in childhood, particularly during the first four years. They are due to insufficient muscular contraction affecting the vibration of the valves and their apposition in such a way as to produce a systolic murmur, which can be heard even in the larger peripheral vessels.

Treatment.—The existing anemia must be corrected. Gymnastic exercises or heart massage, carefully adapted to the conditions of the individual case, are distinctly useful; exercise must be regulated in each case according to the functional capacity, and then systematically increased.

7. **Palpitation of the Heart, Nervous.**—This phenomenon is not infrequent in children, especially in those with neurotic or hysteric taint, in chlorotics, and in those in whom there is dilatation of the heart due to some other cause. Momentary palpitation may also be produced by psychic emotion, joy or fright, onanism, and by intoxication with alcohol, wine, coffee, or nicotin.

The *symptoms*, which consist in acceleration of the heart action and dyspnea, in very rare cases assume an alarming character, and then only in excessively excitable children, in whom the attacks may be very violent and sometimes associated with hysteric manifestations, a copious eruption of sweat, and evidences of exhaustion.

Treatment.—As the condition is met chiefly in children during the development period, it calls for careful hygienic and pedagogic management and the avoidance of any kind of bodily or mental overexertion.

As regards internal medication, iron or arsenic preparations are indicated, depending on the patient's general condition; in decidedly neurotic children bromin preparations or

some reliable syrup of hypophosphites, 1 teaspoonful once or twice a day, or hypophosphites in the form of a tablet, 1 or 2 a day, or compound syrup of kola (Hell), 1 or 2 teaspoonfuls a day, at noon and after the evening meal, are the drugs to be employed.

Tincture of valerian 1 to 3 c.c. (15–45 min.) a day, or validol 3 to 5 drops, two or three times a day, has a favorable effect on the number and severity of the attacks.

In addition to these remedies the application of cold to the precordia, laxatives for their decongestive effect, and hot foot-baths with mustard and mustard-plasters to the calves of the legs are to be recommended during a severe attack.

The *diet* should be as simple as possible, but nutritious; alcoholic beverages, tea, coffee, and spices must be forbidden.

While combating overexertion, muscular exercise and suitable gymnastics, such as horizontal bar work, bicycling, and walking, should be insisted on. Mild hydriatic measures and carbonic acid gas baths are also appropriate. If the question of change of air comes up for consideration, localities with a mild mountainous climate should be advised.

Heart Lesions, Congenital. See HEART, DISEASES OF.

Heart Murmurs. See HEART, DISEASES OF.

Heart, Palpitation of. See HEART, DISEASES OF.

Hemichorea. See CHOREA MINOR.

Hemicrania. See HEADACHE.

Hemoglobinuria.—The essential *features* of this condition consist in disintegration of the red blood-corpuscles and the excretion of blood-pigment without red cells in the urine. The condition is either primary and periodical, so-called paroxysmal hemoglobinuria, especially as the result of catching cold and excessive bodily exercise, or due to some unknown cause; or in many cases it is secondary and due to

toxic influences in infectious diseases, such as intermittent fever, scarlet fever, diphtheria, influenza, Werlhoff's or Winckel's disease, and in hereditary lues; or it may occur after poisoning with potassium chlorate, extract of male fern, arsenuretted hydrogen, and after burns.

In the paroxysmal form the *symptoms* observed are a temporary feeling of weakness and lassitude and occasionally vomiting; in some cases, however, the general health remains unaffected. The urine varies in color from a ruby red to a dark-red brown, contains a heavy sediment, but is clear and transparent after settling, of high specific gravity, and on boiling precipitates albumin.

Spectrum analysis shows the presence of blood-pigment by the characteristic absorption stripes. The sediment, aside from hyaline and granular casts, contains nothing but brown detritus without red blood-cells.

The urine presents the same appearance in hemoglobinuria due to some primary cause, except that the concomitant symptoms are usually more or less violent, consisting in severe vomiting, chills, diarrhea, cardiac weakness, and pains in the abdomen. In potassium chlorate poisoning, icterus, a brown discoloration of the skin, and swelling of the liver and spleen, are also present.

The *prognosis* of the disease is sometimes doubtful and depends chiefly on the cause.

The *treatment* depends on the etiologic factors. In potassium chlorate poisoning lavage of the stomach is indicated, followed by the administration of large quantities of sodium carbonate in water or milk. Large quantities of fluids, especially milk, also find their most extensive use in the other forms of hemoglobinuria. Bodily rest should be insisted upon as much as possible, and in the paroxysmal form any exposure to the danger of catching cold must be avoided, and the recurrence of attacks guarded against by wearing suitable clothing, especially foot-gear, and by the systematic use of hardening procedures.

During the intervals between the attacks of paroxysmal hemoglobinuria iron preparations are indicated, and in those

cases in which there is a suspicion of syphilis or malaria, iodin or quinin preparations should be prescribed.

Hemophilia (*Bleeder's Disease*).—This condition is always hereditary and congenital, and is probably due to some pathologic changes in the lumina of the blood-vessels and in the composition of the blood. Soon after birth profuse hemorrhage sometimes occurs from the ligated umbilical cord or its stump (see under NAVEL, DISEASES OF), or later on the performance of circumcision, after vaccination, or the extraction of a tooth, or some other traumatism associated with loss of blood. Aside from these traumatic hemorrhages, however, spontaneous extravasations of blood into the skin or mucous membranes, as well as into articular cavities, and nasal, renal, and intestinal hemorrhages also occur. In many cases the morbid tendency disappears as the child grows older, but any individual in whom hemophilia has once been demonstrated must be guarded as much as possible against any active or passive traumatism. If a hemorrhage takes place, packing, pressure-bandages, or cold applications must be resorted to, depending on the source of the bleeding; in parenchymatous or interstitial hemorrhages, styptics are administered internally. For that purpose solution of chloride of iron, 10 to 20 drops, or extract ergot in the same dose, or a 2 per cent. gelatin solution, is prescribed. If the hemorrhage is severe, hypodermic injections of Merck's sterilized gelatin solution may be given.

During the latent period the *diet* of hemophilic individuals requires special attention; it should be as nutritious as possible and easily digestible. Great caution should be enjoined in the matter of rest, particularly during menstruation. Whenever there is a tendency to congestion, mild laxatives and hot foot-baths are prescribed.

Hemorrhage, Cerebral.—Hemorrhage into the brain substance occurs in children either from anomalies of the blood-vessel walls, especially in lues and in the hemorrhagic diathesis, or more frequently from increased blood-pressure

in diseases of the lungs and heart, especially in whooping-cough, and whenever the blood is dammed back by the pressure of a glandular tumor. The effects of hemorrhage into the brain substance manifest themselves in hemiplegic phenomena, presenting the picture of focal diseases.

Hemorrhage into the brain often develops intra partum, and the infant under such circumstances usually exhibits extreme asphyxia (*vide*). But a hemorrhage of considerable magnitude may be present without causing any marked symptoms, and the child dies a few days or weeks later with the symptoms of pulmonary atelectasis. The *prognosis* as well as the *treatment* are usually hopeless.

Hemorrhage from Kidney. See HEMORRHAGE, RENAL.

Hemorrhage from Nose. See EPISTAXIS.

Hemorrhage from Stomach and Intestines. See MELÆNA NEONATORUM.

Hemorrhage, Gástro-intestinal. See MELÆNA NEONATORUM.

Hemorrhage into the Spinal Meninges.—In this disease active or passive traumatic injuries during birth are to be regarded as the *exciting causes;* hence the *symptoms* which determine the diagnosis consist in convulsions of the upper and lower extremities occurring soon after birth and followed by palsies and abolition of the reflexes.

Spinal hemorrhage occurring in older children as the result of traumatism, disease of the vertebræ, or purpura, manifests itself by phenomena similar to those observed in inflammation of the spinal meninges. It may disappear by absorption of the extravasated blood without leaving any permanent disturbance, or may cause paresis or paralysis of one or more of the extremities. In newborn infants hemorrhage into the spinal meninges usually runs a rapidly fatal course with asphyxic and tetanic symptoms. Rest and local

applications of cold are probably the only methods of *treatment* that have any effect on the cause. Palsies remaining after the disease has run its course require mechanical treatment with massage and electricity and the internal administration of iodin preparations.

Hemorrhage, Meningeal (*Apoplexia Neonatorum*).—The same *causes* that lead to the formation of cephalhematoma (*vide*) may, by producing laceration of the veins of the pia or even of the sinuses themselves, lead to a more or less extensive subdural hemorrhage, which, in the great majority of cases, occupies the convexity of the brain.

When these extensive hemorrhages occur the child is born in a condition of extreme asphyxia and dies in a short time in coma; sometimes, however, apparent recovery takes place, but the child does not cease to present manifest signs of asphyxia and insufficient respiration and either dies at the time or the symptoms subside—probably only when the extravasation of blood is slight—and complete recovery without any succeeding palsies may take place. Circumscribed hemorrhages, however, in many cases form the beginning of encephalitic processes and may be the cause of cerebral palsy, which will be discussed in another place (see PALSY, CEREBRAL).

The *treatment* of an extensive meningeal hemorrhage includes all those measures which are employed in cases of asphyxia, the chief indication being to provide for the nourishment of the child.

Intermeningeal hemorrhages due to traumatism, to which luetic children are especially liable on account of disease of the blood-vessel walls, are treated by the application of cold to the head, laxatives to keep the bowels open, and, in case of coma, by stimulating the skin. In some cases, when the face becomes very red, the carotids pulsate violently and the fontanels are tense, the withdrawal of blood by means of leeches applied to the mastoid process may be considered.

Hemorrhage, Nasal. See EPISTAXIS.

Hemorrhage, Renal.—Renal hemorrhage occurs in children after severe hyperemia, the result of toxic doses of diuretics, turpentine and various balsams that irritate the kidneys; in uric-acid infarct, renal gravel, renal calculi, traumatism, embolism; as a concomitant of marantic thrombosis, especially in cholera infantum; as a manifestation of the hemorrhagic diathesis in purpura; in severe cases of measles, scarlet fever, and diphtheria; and during the course of pyelitis.

Hemorrhage is often the first symptom of a malignant growth of the kidney, which may be present in earliest infancy but may not be recognized until later, when it begins to increase in size.

The occurrence of periodic hemorrhages, the finding of cylindrical or ribbon-shaped coagula, and the uniform admixture of blood with the urine point to hemorrhage from the pelvis of the kidney or the renal parenchyma; the finding of casts covered with red blood-cells indicates hemorrhage from the parenchymatous tissue alone.

The *prognosis* depends on the cause.

Treatment.—In every case rest in bed, uniform heat, and a milk diet are to be prescribed. When the hemorrhage is profuse, the local application of cold to the region of the kidneys and hemostatics, such as ergot in the form of an infusion, 1 gm. (15 gr.), in the course of the day; ergotin (Bombellon), 0.5 to 1 gm. (7½–15 gr.) per diem with syrup; gelatin in the form of calves'-foot-jelly soup, or an injection of 40 c.c. (10 fl. dr.) of a 2 per cent. sterilized gelatin solution (Merck). At the same time appropriate treatment for the primary trouble must be instituted.

In all those diseases which are due to abnormal increase of uric acid, such as pyelitis and nephrolithiasis, the formation of uric acid must be prevented as much as possible by regulating the *diet* and by ordering mineral waters or drugs. For this purpose we give, in addition to milk, a diet rich in carbohydrates; in milder cases the patient is ordered to drink daily of some carbonated alkaline water, such as Bilin, Preblau, Salvator-Wasser; or a drinking-cure of several weeks'

duration of Karlsbad Mühlbrunnen or Schlossbrunnen, Fachinger, Vichy, Ems, or Wildungen, 100 to 200 c.c. (3–6 fl. oz.), lukewarm, once or twice a day.

Medicinally, sodium phosphate or carbonate, 1–5 gm. to 100 c.c. (15–75 gr. to 3 fl. oz.) of water; lithia preparations, such as lithium carbonate, 0.05 gm. (¾ gr.) three times a day; or urotropin, 0.2 to 0.5 gm. (3–8 gr.) two or three times a day, are suitable.

In cases of renal colic, opium or morphin, either internally or in the form of suppositories or an enema, and protracted warm baths and hot compresses or poultices to the lumbar region are indicated.

Hemorrhage, Umbilical. See UMBILICUS, DISEASES OF.

Hemorrhagic Diathesis. See PURPURA.

Hemorrhagic Encephalitis. See ENCEPHALITIS, ACUTE HEMORRHAGIC.

Hemorrhoids (*Hemorrhoidal Nodes*).—Internal occasionally, but chiefly external, hemorrhoids are produced in children by some mechanical obstruction of the circulation, and may be observed even in infants; they may be due also to a congenital stenosis of the anus or to chronic constipation. In many cases of hemorrhoids a hereditary tendency can be demonstrated. Sometimes they are external and cause pain, difficult defecation, and repeated hemorrhages from the rectum. Dark-blue nodules, varying in size up to that of a pea, are seen at the margin of the skin. An examination should always be made with the finger or with a rectal speculum to determine the presence of any nodules higher up in the rectum.

The proper management of hemorrhoids consists above all in the administration of laxatives to guard against the accumulation of fecal matter. When the nodules are much swollen or inflamed, antiphlogistic remedies are to be applied locally; anusol or nodusan suppositories may be given

once or twice a day, or Atzberger's rectal irrigator may be used.

Hepatic Cirrhosis. See LIVER CIRRHOSIS.

Hereditary Syphilis. See SYPHILIS.

Hermaphroditism.—Among the many malformations of the genitalia should be mentioned hermaphroditism. There is true hermaphroditism, in which the male and female sexual organs are absolutely distinct or show only a rudimentary de-

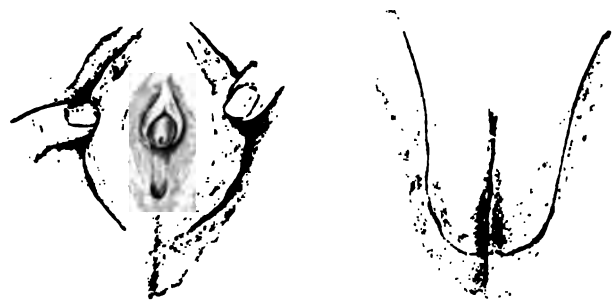


FIG. 50.—Pseudohermaphroditism in a boy six weeks old: The testicles can be felt in the labia majora.

velopment, and pseudohermaphroditism, in which one or the other sexual gland undergoes marked development with an external genital organ of the opposite sex (Fig. 50).

Hernia, Cerebral. See MENINGOCELE.

Hernia, Inguinal.—The predisposition to hernia is usually congenital and is especially found in prematurely born children. Anatomically the predisposition to hernia is explained by the delayed descent of the testicle and by patulousness of the processus vaginalis peritonei, which, as has been shown by investigations conducted for the purpose, is more frequent on the right than on the left side. Later, a loop of intestine of variable size is forced into the open process by the increased abdominal pressure which attends coughing, crying,

straining at stool, and micturition (on account of phimosis). In boys a small spheroidal tumor is first observed in the inguinal region, and as the tumor gradually enlarges it extends into the scrotum and surrounds the testicle. In girls the entrance of a knuckle of intestine through the open canal of the round ligament presents a tumor in the groin, which may by further progress appear as a globular bulging in one of the labia majora.

In many cases the inguinal hernia is associated with cryptorchidism or with hydrocele of the testicle or of the spermatic cord (Figs. 55, 56, 57). These complications should therefore be borne in mind, as their presence confirms the *diagnosis* of hernia.

In every case of inguinal hernia a digital examination must be made to determine the size of the external ring and the possibility of replacing the prolapsed loops of intestine, because later, owing to the formation of adhesions between the loops of the intestine and the testicle, taxis becomes impossible. As strangulated hernias are not rare, even in children, it is important, after replacing the prolapsed loops of intestine, to secure closure of the hernial opening as soon as possible by the application of a suitable truss. It is possible to apply a truss even during the first weeks after birth, and sometimes obliteration of the peritoneal process is effected in a very short time; it is useless, however, to apply a truss in cases of cryptorchidism. The prospect of success in the wearing of a truss is better the longer it is worn before the child first tries to walk. The truss must be kept clean and constantly changed, and the skin requires special attention, because it is very apt to become eczematous. If eczema develop, the excoriated areas must be protected as much as possible with soap-plaster, elastic zinc-oxid adhesive plaster, or simply with ointment and an ordinary dressing, the truss being worn only during the day. Leather trusses should be wrapped with gutta-percha paper or covered with rubber material, which is sewed on. In view of the other etiologic factors, free evacuation of the bowels is indicated, and any intestinal disturbance, cough, or phimosis, if present, requires correc-

tion. If incarceration takes place, the child is placed in a hot bath with the pelvis elevated for the purpose of trying taxis, or an attempt at reposition may be made by laying a pledget of cotton over the hernia and keeping it saturated with ether for some time. The cold produced by the evaporation diminishes the size of the incarcerated hernia. If it is impossible to replace the hernia, even under anesthesia, herniotomy must be performed. Bassini's radical operation, which is almost universally successful, should be unhesitatingly recommended whenever the wearing of a truss is impossible or the family desires operation.

Hernia of Recti Muscles. See DIASTASIS AND HERNIA OF THE RECTI MUSCLES.

Hernia of the Brain. See MENINGOCELE.

Hernia, Umbilical. See UMBILICUS, DISEASES OF.

Herpes Facialis (*Fever Blisters*).—Herpes facialis manifests itself as small vesicles the size of millet-seeds, arranged

FIG. 51.—Herpes facialis (Stelwagon).

in groups on a reddened base and followed by edema of the surrounding skin (Fig. 51). The condition occurs chiefly in febrile diseases due to some disturbance of the digestive or respiratory apparatus, and is particularly frequent in croupous

pneumonia and cerebrospinal meningitis; or the lesions, which usually appear at the edge of the lips or nostrils, may be due to some nervous irritation. The vesicles dry up in a few days and disappear without leaving a scar. Herpetic lesions may be dusted with a 10 per cent. boric acid, salicylic acid, or dermatol powder or covered with some indifferent ointment.

Herpes Tonsurans (*Ringworm*).—The *cause* of this parasitic disease of the skin is known as the trichophyton tonsurans, which is carried not only by domestic animals, but also by infected moist linen, and may be transmitted from the affected child to its surroundings. The localization and spreading of the disease in the skin at first manifests itself by pale-red patches with irregular outlines and an area of scaling

FIG. 52.—Circinate ringworm (Cantrell).

in the center. The initial lesions spread peripherally in circles or irregularly, and gradually produce extensive efflorescences, which, by the confluence of adjacent lesions, lead to the formation of circular patches on the skin extending peripherally and containing at the center an area covered with scales (ringworm) (see Fig. 52).

The scratching to which the intense itching gives rise causes a variety of changes in the appearance of the lesions,

and may cause the disease to spread and involve other portions of the body. If the contagion is carried to the hairy scalp, sharply defined, hairless disks covered with scales and crusts (herpes tonsurans capillitii) may be formed. The fungus may invade the nails and produce lesions (onychogryphosis trichophytica) which cause a claw-like incurvation and brittleness of the nails.

In beginning *treatment*, first of all, the scales of epidermis must be softened by rubbing the skin with green soap or tincture of green soap, followed by alcohol, ether, or chloroform. These remedies are to be rubbed on with a brush at night and allowed to dry. To destroy the fungi one of the following substances may be employed: 2 to 5 per cent. resorcin or carbolglycerin, tar, 3 per cent. chrysarobin [chrysarobin 3 gm. (45 gr.), lanolin 90 gm. (3 oz.), lard 10 gm. (2½ dr.)], or chrysarobin, 1 gm. (15 gr.), to traumaticin, 25 gm. (6 dr.); a 10 per cent. alcoholic solution of epicarin, to be painted on the part once a day for from four to six days; a 10 per cent. pyrogallic ointment; tincture of iodin, or iodin and glycerin; or: oil of cade, green soap, ichthyol, and vaselin, each 20 gm. (5 dr.); or Wilkinson's ointment; or a 1 : 500 aqueous solution of bichlorid, used as a wash two or three times a day; or naphthol 1.5 gm. (22 gr.), tincture of green soap and vaselin, each 15 gm. (½ oz.). Or the patient is ordered to be rubbed morning and evening for three days with naphthol 2 gm. (30 gr.), green soap 100 gm. (3 oz.), followed by a dusting-powder until desquamation of the epidermis takes place.

In herpes tonsurans capillitii the hair must be cut short, the crusts softened, and the diseased areas epilated, after which antiparasitic washes or ointments may be applied. Owing to the frequent occurrence of conjunctivitis, however, the use of pyrogallic and chrysarobin ointments on the scalp is to be deprecated. If the nails are diseased, they must be first softened by prolonged immersions in hot water and soap or by applying compresses wrung out of dilute liquor potassæ.

Herpes Zoster (*Shingles; Zona*).—Disease of a spinal

ganglion or of a peripheral nerve fiber from percussion, pressure, or some other traumatic influence may cause pain or a

FIG. 53.—Herpes zoster in a child nine years of age, due to contusion of the vertebral column.

FIG. 54.—Herpes zoster in a child nine years of age, due to contusion of the vertebral column.

burning sensation, preceded by fever and redness of the

affected region of the skin, which is usually limited to one side of the body. The affected area is soon covered with groups of pin-head-sized to lentil-sized nodules which in a few days are converted into small vesicles filled with a watery fluid, and still later into blebs (Figs. 53, 54).

The serous contents of the lesions become turbid, the inflammation of the skin and the pain subside, and crust-formation takes place. The process may last for weeks, and after its complete disappearance, whitish patches remain in the skin, and neuralgic pain occasionally persists for a long time.

In rare cases the contents of the vesicles become hemorrhagic (herpes zoster hæmorrhagicus), or gangrene of the cuticle and of the vesicles develops (herpes zoster gangrænosus).

The *treatment* consists chiefly in protecting the vesicles against pressure and friction, which is accomplished by copious dusting with some toilet powder and wrapping the parts in layers of cotton. To relieve the pain, which is often distressing, ointments are applied locally, containing 2 per cent. of cocain, extract of opium, morphin or belladonna, while internally antipyrin, pyramidon, or salipyrin may be given. In secondary neuralgias quinin often has a good effect.

Hip, Congenital Dislocation of (*Luxatio Coxæ*).—Bade has called attention to a valuable early sign of dislocation of the hip which, in view of the difficulty of Röntgen-ray examination and mensuration in the newborn, merits notice; it refers to the wrinkles observed in the thighs of the newborn. The anterior surface of a newborn infant's thigh presents for examination two folds besides the inguinal fold. The first of these, the adductor fold, lies between the adductor groove and the quadriceps cruris and runs from the upper, outer portion of the thigh downward and inward. The second fold lies somewhat lower, near the knee-joint, and begins somewhat nearer the median line. It is less clearly marked than the adductor fold and becomes more indistinct as the child grows. In a normal child these folds are symmetrically formed in the two extremities and lie at the same

level. When the thighs are placed close together, so that the pelvis lies straight and the knee-joints are pressed in as much as possible, it will be seen that the extremity of the adductor fold, which is visible on the inner surface, coincides with that of the other side. This is not the case, however, if congenital dislocation of the hip or even a disposition to the deformity is present, as in that case the fold is displaced upward on the dislocated leg. In view of the perfection to which treatment has now been carried, a surgical specialist should be called into consultation.

Hirschsprung's Disease. See CONSTIPATION.

Hives. See URTICARIA.

Hodgkin's Disease. See PSEUDOLEUKEMIA.

Hydrocele.—Like inguinal hernia this condition is exceedingly common. It is due to patulousness of the vaginal canal, usually of congenital origin, and its communication with the peritoneal cavity. The tumor may be either bilateral or unilateral, and in the latter case is usually right-sided (Fig. 55). If occlusion of the peritoneal process has taken place, the accumulated fluid cannot be forced back into the peritoneal cavity. The accumulation of serum in the peritoneal double sac, known as the tunica vaginalis propria, presents a tumor of variable size, which is dull on percussion, shows distinct fluctuation, is transparent, and often covered with very thin skin.

Sometimes hydrocele of the testicle is associated with an accumulation of fluid in the vaginal process, or the latter may occur by itself and is then known as hydrocele of the spermatic cord. An analogous condition occurs in the round ligament in girls. In hydrocele of the spermatic cord a spindle- or pear-shaped tumor of variable tension is discovered along the course of the structure which, except for the localization and shape, presents the same clinical signs as hydrocele of the testicle. In this form of the disease there

may also be a communication with the peritoneal cavity. Occasionally hydrocele of the testicle and spermatic cord is accompanied by cryptorchidism or inguinal hernia.

The *prognosis* of these conditions in the infant is favorable and only in the most exceptional cases is *special treatment* required. If phimosis is present at the same time, the rule is to correct the latter condition first. Its correction is usually followed by spontaneous cure of the hydrocele; on the other hand, if the hydrocele is tapped while the phimosis continues, the fluid regularly reaccumulates. In cases not complicated

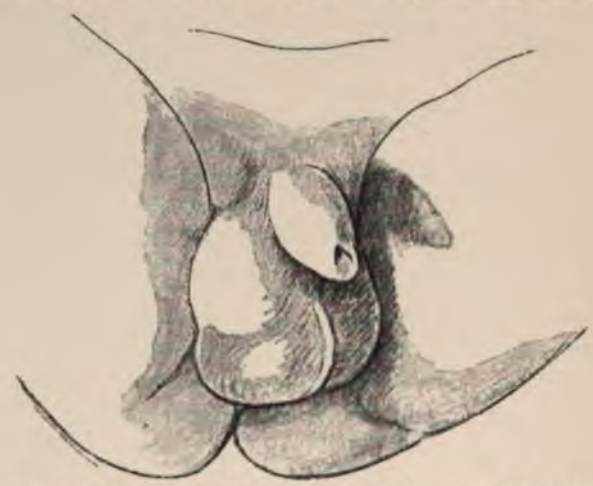


FIG. 55.—Inguinal hernia, hydrocele of the cord and hydrocele of the tunica vaginalis, in a child six months old.

by disturbance of urination it usually suffices, in the case of infants, to elevate the testicles by keeping the diaper between the scrotum and the legs; in older children, by wearing a suspensory to promote absorption.

A large hydrocele of the spermatic cord is necessarily apt to interfere with closure of the external ring because the upper pole of the hydrocele extends into it. For this reason the association with inguinal hernia is not uncommon (Figs. 55–57).

In cases of open hydrocele of the testicle or cord the fluid can be readily forced back into the peritoneal cavity,

after which a suspensory should be worn for some time, in order to prevent recurrences. Sometimes the fluid can be made to disappear by a single application of pressure, even in cases of closed hydrocele of the cord. In cases of excessive hydrocele, both in infants and in older children, puncture with a Pravaz syringe is, however, usually necessary. Sometimes scratching the tunica vaginalis with the needle of the

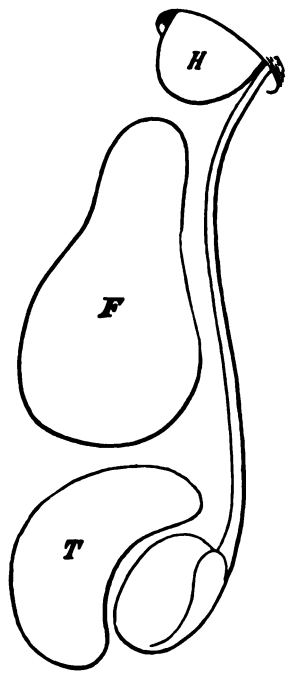


FIG. 56.—Schematic representation of the same case (Fig. 55): *H*, Hernial sac; *F*, hydrocele of the cord; *T*, hydrocele of the testis.

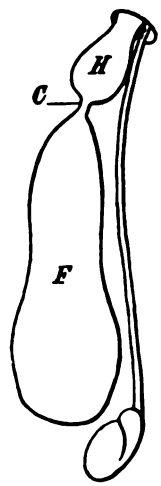


FIG. 57.—Schematic representation of a communicating hydrocele: *H*, Hernial sac; *C*, communication; *F*, hydrocele of the cord.

syringe suffices to cause adhesion of the sac by setting up an inflammation, or a few drops of absolute alcohol or of 5 per cent. solution of carbolic acid or tincture of iodin are injected after the hydrocele has been evacuated. Before doing so, however, it must be definitely ascertained that there is no communication with the peritoneal cavity. To relieve the pain that follows the injection cold compresses are applied.

Hydrocephaloid. See CHOLERA INFANTUM and ANEMIA, CEREBRAL.

Hydrocephalus, Chronic.—Excessive accumulation of fluid, either outside the ventricles between the dura and the arachnoid, or in the more frequent intraventricular form, in which case it is caused by inflammatory processes of the ependyma and of the plexus choroidei, may be either congenital or acquired. The increasing exudate leads to atrophy of the brain substance surrounding the ventricle and may

FIG. 58.—Chronic hydrocephalus in a child two years old.

cause excessive dilatation of the cranium, with separation of the sutures and enormous enlargement and tension of the fontanels (see Fig. 58). Aside from the well-known and striking changes in the size of the head, the structural changes cause deformities in the bones of the face, especially bulging of the forehead and depression of the orbital plates, which not infrequently causes prominence of the eyeball. But even when the orbital plates are normal, the appearance of the eyes is quite characteristic; almost half of the cornea is covered by the lower lid, while a large portion of the sclera is visible above.

The eyes have a peculiar staring look, and nystagmus or strabismus is frequently present. The progressively increasing weight of the head is too great a load for the vertebral column and the child is unable to hold up its head, so that in the erect postion it falls backward or wabbles from side to side. The child soon develops an old or idiotic look, and the size of the skull forms a marked contrast to the diminutive face.

The *causes* of congenital as well as acquired hydrocephalus are unknown in many cases. The condition is sometimes found with syphilis, parental tuberculosis, or alcoholism either of the father or the mother; sometimes a profound psychic emotion on the part of the mother or intoxication of the father at the moment of conception is given as the cause of congenital hydrocephalus.

Occasionally solitary tubercles in the brain mechanically interfere with the venous flow (for example, by pressure on the vena magna Galeni) and thus become the cause of a fluid exudate large enough to force apart the already closed sutures and fontanels.

After birth chronic hydrocephalus may develop as a result of a variety of circulatory disturbances, which may in turn be due to nutritive disturbances, some other chronic disease of the brain, or to some toxic cause. As frequent etiologic factors, rachitis and syphilis should be mentioned, in the course of which an excessive accumulation of fluid may lead to the production of a chronic internal hydrocephalus.

With regard to the *symptoms*, the development of hydrocephalus is recognized by the increasing size of the skull and concomitant changes in the sutures and fontanels. In the scalp, which is attenuated, sparsely covered with hair and quite bald at the occiput as well as on the temples, the veins appear dilated and tortuous. The child is capricious and irregular about taking food, becomes emaciated and is usually restless, sleeps badly, is readily frightened, and keeps up a peculiar monotonous cry day and night. Occasionally, and more particularly when repeated exacerbations with an increase of the exudate take place, convulsions or spastic

closure of the glottis, or persistent rigidity, or spastic contractions of individual extremities are observed. The child is unable to hold up its head, or can do so only for a little while at a time, and a secondary kyphosis or kyphoscoliosis develops. Other cases develop paresis and paraplegia, and paralysis of the bladder and rectum.

As a rule, the general nutrition suffers in spite of every effort on the part of the physician, and the large head presents a marked contrast to the weakly, emaciated body.

According to the severity of the disease, the child's mental development suffers, although many of these children show astonishing talents, albeit sometimes only in one direction. Visual disturbances, strabismus, and blindness are comparatively common.

The *prognosis* in chronic hydrocephalus depends not only on the extent of the disease, but, in many cases, on the tendency to exacerbations.

Treatment.—Even a modicum of success in the treatment of hydrocephalus can be expected only when the basal trouble is syphilitic, in which case a course of antisyphilitic treatment is to be instituted (see SYPHILIS). The routine administration of potassium iodid in doses of 0.5–1.0 gm. to 80 c.c. (7½–15 gr. to 2½ fl. oz.), 1 or 2 teaspoonfuls every two or three hours, is practically useless. Equally useless is the practice of constricting the cranium with strips of adhesive plaster or mercurial plaster. Symptomatically, the rachitis, which is almost always present, and the tendency to constipation must be combated. If there is great excitability, the bromids are indicated and should preferably be given in the form of enemata with chloral hydrate. Surgical intervention has recently been tried and offers much more chance of success than any form of internal medication. This is especially true of Lumbar Puncture (*vide*), which is much preferable to the other more dangerous procedure of puncturing the ventricle. Not more than 30 to 50 cubic centimeters of fluid should be removed, and the frequency of the pulse and respiration must be watched during the procedure.

Hydrorrhachis. See SPINA BIFIDA.

Hydrothorax.—The collection of a slightly albuminous fluid in the pleural cavities is always a secondary phenomenon and is observed chiefly in diseases of the kidney, in association with anasarca, and in severe valvular disease of the heart, with rupture of compensation. The presence of a passive effusion is recognized by the same physical signs as obtain in pleural effusion, the change of note and change of position being very marked in this complication. The *treatment* depends upon the primary trouble.

Hygroma, Congenital Cystic, of the Neck. See LYMPHANGIOMA, CYSTIC.

Hyperemia, Cerebral. See BRAIN, HYPEREMIA OF.

Hyperemia of the Brain. See BRAIN, HYPEREMIA OF.

Hyperidrosis.—Increased secretion of sweat, especially on the palms of the hands and soles of the feet, is often observed in quite young children and is usually *attributed* to anemia or nervousness. As a result of the excessive sweating the epidermis becomes macerated and exfoliates, with the formation of vesicles which burst and may leave excoriations or small ulcers. The skin is always moist and feels cold to the touch. Older children also complain of being cold.

Treatment.—The affected parts may be cautiously painted with a 5 per cent. solution of chromic acid or a solution of 1 tablespoonful of formalin to 1 L. (quart) of water; or after a soap-bath they may be rubbed with one of the following alcoholic solutions: 1 per cent. menthol, carbolic or salicylic acid; or β-naphthol 1 gm. (15 gr.), Cologne water 25 c.c. (6 fl. dr.), brandy 175 c.c. (5½ fl. oz.), and dusted with salol 1 gm. (15 gr.), zinc oxid and Venetian talc, of each 45 gm. (1½ oz.); or with equal parts of tannoform and Venetian talc.

Hyperidrosis without fever in debilitated children is observed chiefly in rachitis and chronic tuberculosis, and

demands, above all, scrupulous cleanliness of the skin and clothing and thorough ventilation of the living-rooms.

Hypertrophy of Heart. See HEART, DISEASES OF.

Hypertrophy of Thymus. See THYMUS, ENLARGEMENT OF.

Hypertrophy of Tonsils. See TONSILS, HYPERTROPHY OF.

Hypodermoclysis. See CHOLERA INFANTUM.

Hypospadias. See EPISPADIAS.

Hysteria.—With the growth of our knowledge of this disease, which occurs in the earliest years of childhood, the number of clinical varieties has also increased. In the most typical cases an hereditary taint is discoverable; but hysteric states may occur under certain circumstances in the absence of heredity, particularly in the female sex during the period of development, being brought on by psychic excitement of various kinds. The beginning of the school period offers a wide field for the development of hysteric states, which may, however, also be brought on by anemia or chlorosis, or may develop during convalescence from some other disease.

Despite the variability of hysteric states they may be divided into several groups according as the disease affects the sensory, motor, or psychic sphere.

The first group embraces partial hyperesthesiæ, anesthesiæ, or analgesiæ, often confined to small areas; these are rare in children. The *symptoms*, as a rule, consist of headache, vomiting, singultus, and occasionally localized neuralgia and pain in individual joints. Sensitiveness to pressure over the processes of individual vertebræ, the nipple, and the hypogastric regions (ovaries), and, later, diminution of the corneal and pharyngeal reflexes, belong to the complex of the so-called hysteric stigmata.

Disturbances in the motor sphere manifest themselves by a great variety of phenomena distributed over the entire muscular domain; clinically the sudden appearance and often rapid disappearance of some functional disturbance is significant and strongly suggests hysteria.

Aside from the comparatively slight spasms of short duration in individual muscles (chorea electrica), or palsies with or without contractions, epileptic and cataleptico-tetanic attacks occasionally occur. Among the milder forms of spasm are included spasm of the laryngeal muscles (chorea laryngis), with which is associated the utterance of a peculiar barking sound or spasmodic explosive cough, stammering, and aphonia. Here belong also the phenomena known as astasia-abasia, during which the child cannot move its legs unless they are in a sitting or recumbent posture; spasmus nutans; hysteric chorea, sometimes characterized by hopping and skipping movements; and disturbance of the bladder, during which retention or abnormally frequent voluntary or involuntary micturition is observed.

Quite as variable as the motor phenomena are the psychic disturbances. These manifest themselves sometimes by somnolence or again by insomnia, with sudden crying out and loud talking during sleep (pavor nocturnus), moodiness running the gamut from excessive hilarity to melancholy, increased desire to know and learn, disturbances of the appetite with gastric or olfactory perversions, and occasionally sexual excitement. In severe cases psychotic disturbances, such as maniacal excitement, somnambulism with attacks of convulsive crying or laughing, may be present.

In addition to these phenomena, which have only been roughly sketched, children affected with hysteria or in whom hysteria is suspected present a variety of vasomotor changes, such as sudden bilateral or unilateral redness of the skin, often associated with profuse sweating, partial edema, and urticarial eruptions.

Older children also complain of the symptoms known as globus and clavus, just like adults, and have frequent attacks of vomiting, especially of fluid material.

The *prognosis* of hysteria in children depends upon a variety of circumstances. If the child is young and the prophylactic precautions advised by the physician are rigorously carried out, the prospect of speedy disappearance of the malady is good, although one should always be ready for relapses.

Treatment.—Successful management of the case presupposes accurate investigation of the patient's family, conditions, and mode of life. As soon as a clear idea of these matters has been obtained, the necessary precautions can be taken. These include chiefly rational training, the restriction of mental occupation unsuitable to the child's age, temporary removal, if necessary, from the nervous and noisy environment of the home, or some other change in the surroundings which dominate the child's education.

The judicious exercise of authority, or even a suitable measure of severity on the part of the physician or some other person, often has a marked beneficial effect, not only on the course of individual attacks, but on the disease itself. This form of suggestion can, in many cases, be materially reinforced by the threat of some surgical intervention or by the employment of strong faradic currents and hydrotherapeutic procedures.

From the hygienic standpoint, hardening procedures, exercise in the open air, gymnastic exercises and swimming, and, in children of suitable age, bicycling should be insisted upon for the purpose of strengthening the body. The *diet* should be chiefly vegetable, and all exciting beverages and highly seasoned foods must be prohibited.

Warm half-baths or full baths every evening or every other evening, immediately before retiring, also have a good effect; and an early bed-hour must be insisted upon. Anemia and chlorosis require suitable treatment with iron and arsenic preparations.

Under many circumstances nerve sedatives, such as valerian tea or tincture of valerian, 10 to 20 drops, or bromid preparations, may be necessary. Hypophosphites, in the form of a reliable syrup or of the more convenient hypophosphite tab-

lets, and compound syrup of kola (Hell) exert a distinctly favorable action.

Ichthyosis.—This cutaneous affection, which is usually inherited or rests on an hereditary predisposition, often occurs very early in childhood, and is characterized by the excessive formation of epidermis (see Fig. 59).

FIG. 59.—Ichthyosis congenita. Case photographed when four days old. Mother pregnant seven times, giving birth the fifth and the last (present case) to infants with congenital ichthyosis. (Courtesy of Dr. J. MacF. Winfield.)

Depending on the intensity of the process several grades are distinguished, the mildest of which is known as **ichthyosis simplex.** In this form the surface of the skin is dry, rough, wrinkled, and covered with desquamated scales of epidermis. It is observed chiefly on the extensor surfaces of the extremities, but may also involve the trunk, especially the region of the flank. The severer form of the disease, in which desquamation of the epidermis goes on to the production of dirty-brown, horny plates or spines, is designated **ichthyosis serpentina,** while the form known as **ichthyosis cornea** is merely characterized by still further thickening of the epithelial plates and spines and sometimes by diffuse extension of the process over the entire body.

As regards recovery from the disease the *prognosis* is unfavorable.

The milder form causes no great subjective symptoms, and the *treatment* merely requires softening of the horny epidermis by inunction with soft soap, beta-napthol ointment, Wilkinson's ointment, or 10 per cent. sulphur ointment, and the use of protracted warm baths or wet packs. In order to maintain its elasticity the skin should be rubbed with oil or fat at frequent intervals.

Icterus Catarrhalis. See JAUNDICE, CATARRHAL.

Icterus Neonatorum.—The yellow discoloration of the skin which occurs with such exceeding frequency a few days after birth is *probably connected* with some physiologic process, and usually runs a benign course.

According to recent views there is in icterus neonatorum diminished blood-pressure in the liver, caused by the changes in the circulation which occur after birth. This diminished pressure in the liver is believed to favor the absorption of bile from the liver, intestine, and portal veins, and the bile-laden blood then enters the circulation through the ductus venosus Arantii, which is still patulous.

The icteric discoloration of the skin varies in intensity, and in children with congenital cutaneous hyperemia the shade may range from orange yellow to a coppery red. The bulbar conjunctiva may escape, and the urine and feces do not present the discoloration which occurs in catarrhal jaundice.

There is no general disturbance, although sometimes the baby ceases to gain weight, even though it is taking sufficient nourishment. After a few days the yellow discoloration disappears; but, in the case of feeble children, it may last several weeks. Icterus neonatorum must be distinguished from the jaundice which is almost a constant concomitant of septic infection (see WINCKEL'S DISEASE and SYPHILIS NEONATORUM), and which, in contrast to the former, always presents an unfavorable *prognosis*. No *treatment* is necessary in icterus neonatorum, but with premature children particularly it is important to see that they are properly fed.

Idiocy (*Feeble-mindedness*).—This psychosis is frequent in children and may be due to a *variety of causes;* it may be congenital or acquired during earliest childhood. Little, for example, in most of the idiotic children that he examined, found the cause to be intermeningeal hemorrhage during birth (see LITTLE'S DISEASE). Idiocy may be due to myx-

FIG. 60.—Idiotic child, two years old, with macroglossia, nystagmus, strabismus, a low grade of myxedema, aphasia, and abasia.

edema even in those cases in which at the time the child is examined by the physician the typical symptoms of myxedema have ceased to be present, for the latter condition appears not infrequently to be temporary. Other causes are microcephalus, hereditary syphilis, meningitis, encephalitis, typhoid fever, alcoholism, infantile epilepsy, etc. (Figs. 60, 61).

The apathetic and the versatile forms are observed
equal frequency. In the latter the child, on account c
unusual vivacity and familiarity with strangers, is not i
quently regarded as very intelligent until the serious diff
ties encountered in teaching the child to speak mak
evident even to a layman that he has to deal with idi

FIG. 61.—Idiotic child, two years of age, with macroglossia, nystagmus, strabis
low grade of myxedema, aphasia, and abasia.

In some cases thyroid extract may be tried (Merck or V
come); but in many others the *treatment* consists solel
adopting proper educational measures.

Impetigo Contagiosa.—As mentioned under the hea
PEMPHIGUS NEONATORUM, an eruption to which the n
impeitgo contagiosa is given may be produced by direct t

mission of the contents of the pemphigus vesicles to older individuals. The eruption in appearance and course is entirely identical with that of pemphigus pustules. In both forms of the disease the staphylococcus aureus has been found to be the *cause*, and the contagiousness has been established beyond a doubt. The disease must be strictly differentiated

FIG. 62.—Impetigo contagiosa (of five days' duration) in a child three years of age. Lesions scattered, and more of the nature of the type of "impetigo simplex" described by Duhring (Stelwagon).

from **eczema impetiginosum.** It begins as a vesicular eruption; the flat vesicles are rapidly converted into sticky crusts of a yellow color like straw or honey (Figs. 62, 63). The skin underneath the vesicles and crusts is always entirely normal and free from inflammation, and hence no scars remain.

In beginning *treatment* wet dressings or dressings with a 5 per cent. salicylic acid ointment, an oil rag, or 2 per cent.

boric acid solution are first applied to soften the crusts, and after their removal the skin is covered with some drying paste, such as Lassar's zinc-plaster mull, or a 2 per cent. precipitate ointment, to prevent further multiplication of the cocci.

To prevent relapses from reinoculation the lesions must be protected against scratching. This is best accomplished by a daily ordinary or medicated bath [containing bichlorid of mercury 1 gm. (15 gr.), potassium permanganate, chinosol, 2 gm. (30 gr.), or lysol, 1 to 2 tablespoonfuls to a bath].

FIG. 63.—Impetigo contagiosa (of one week's duration) in a girl ten years of age, crusting stage already reached; on chin and nose lesions have coalesced (Stelwagon).

The skin and nails must be carefully attended to and the child's linen frequently changed in order to keep it scrupulously clean.

Incarceration.—See INTESTINAL OBSTRUCTION.

Incontinence of Urine. See ENURESIS.

Incubators (*Couveuses*).—The original model proposed by Tarnier consists of a wooden box divided into two parts, with

a removable glass lid. The upper or larger part accommodates the child's bed, while the lower contains earthenware bottles filled with hot sand or water, so that a constant temperature of 30° to 35° C. (86°–95° F.) can be maintained in the upper portion. The latter is provided with a valve and a ventilator to insure constant circulation of the air, and also contains a thermometer, a hygrometer, and a sponge, which must be kept constantly saturated in order to secure the necessary degree of moisture by evaporation. Whenever the temperature of the box begins to fall below the prescribed level, a bottle must be refilled, and if the hygrometer reading

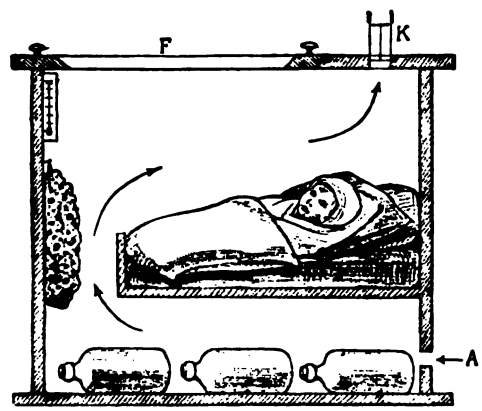


FIG. 64.—Cross-section of a wooden incubator of simple construction, with glass lid (*F*): The air enters through the opening *A*, which can be regulated by means of a damper, passes over the bottles filled with hot water, the saturated sponge, and the thermometer, and escapes through the ventilator *K*.

indicates a reduction of the humidity, the sponge is again saturated (Fig. 64).

Various modifications of this first model of incubator were later suggested, and the recently invented thermophores are now employed as the source of heat. The danger of the spread of septic infection cannot be eliminated altogether, even with the greatest care as to cleanliness and disinfection, for which reason the porcelain incubators recommended by Hutinel have an advantage over the older forms.

As it is necessary to remove the infant from the incubator to feed it and to change the clothing, etc., great care must be

exercised in order to avoid sudden differences of temperature. For this purpose so-called brooders (chambres couveuses) have been devised large enough to hold the nurse as well as the child. By this means the nurse is enabled to attend to the feeding, bathing, changing of linen, etc., without risking a dangerous fall in the temperature to which the infant has been accustomed.

Children of low vitality need be kept in the incubator only until the temperature remains constantly within normal limits and all alarming symptoms have subsided. After they have been removed from the incubator, however, the *treatment* indicated in DEBILITAS VITÆ (*vide*) must be instituted.

Indicanuria.—This is a variable *symptom* in diseases of the digestive organs, being observed both with constipation and in catarrh associated with diarrhea. In many cases the finding of indican affords the first hint of an intestinal disturbance and points to the proper treatment.

The finding of indican in tuberculosis has no diagnostic value, but in doubtful cases a steady increase of indican nevertheless affords some support to the *diagnosis*. The *test* for indican in the urine is performed as follows:

Two drops of a 20 per cent. solution of lead acetate are added to a small quantity of urine in a test-tube and the mixture, which at once becomes dark, is filtered. The filtrate is then treated with an equal quantity of Obermayer's reagent (fuming hydrochloric acid containing 0.4 per cent. of ferric chlorid). On the further addition of from 5 to 10 drops of chloroform, and shaking, a bluish-green contact ring is formed in the presence of indican at the junction of the urine with the chloroform, which collects again at the surface. The contact ring later assumes a distinct indigo-blue color.

Indigestion. See GASTRO-INTESTINAL DISEASES OF INFANTS.

Infant-feeding. See FEEDING, ARTIFICIAL, also FEEDING, NATURAL.

Infantile Eclampsia. See CONVULSIONS.

Infantile Myxedema. See CRETINISM.

Infantile Spinal Paralysis. See PARALYSIS, SPINAL.

Infarct, Uric Acid. See URIC ACID INFARCT.

Infection of Newborn Infant, Septic. See SEPTIC INFECTION, ETC.

Inflammation, Glandular. See LYMPHADENITIS.

Inflammation of Stomach. See GASTRO-INTESTINAL DISEASES OF LATER CHILDHOOD.

Influenza.—An infectious disease occurring usually in epidemic form, rarely sporadic, *caused* by the influenza bacillus which was discovered by Pfeiffer. After a short prodromal period of constitutional disturbance the onset takes place sometimes apparently abruptly with high fever, especially in younger children, and sometimes convulsions and vomiting, with headache, a feeling of extreme lassitude, and pains in the muscles and joints.

The beginning of the fever is attended by all the *symptoms* which are peculiar to the **catarrhal form** of influenza, which is also known as grippe. Severe coryza and a marked cough, at first dry and harassing, and later becoming loose, characterize this common form, even in the absence of any complication.

Rapid multiplication of the influenza bacilli or, as so frequently happens, a mixed infection with diplo,- strepto,- or more rarely staphylococci may lead to the development of capillary bronchitis and pneumonia, diseases which sometimes run a very severe course and may end fatally. Sometimes, however, the march of the disease is more insidious; suppuration takes place, with the production of localized or extensive indurations, abscess of the lung or secondary pul-

monary gangrene, pleurisy, peri- or endocarditis, or even osteomyelitis.

An urticarial erythema or **erythema exudativum multiforme** may be observed at the beginning or during the course of influenza.

The fever increases *pari passu* with the catarrhal process, and under the influence of the complications which develop, with or without a mixed infection, a marked rise in temperature may occur and materially prolong the normal duration of the uncomplicated process. The general condition during this time is very much disturbed; the appetite is usually destroyed, though cases also occur in which it is increased, especially at the beginning.

In those cases in which the catarrhal phenomena are overshadowed by the nervous symptoms the term **cerebral form** is employed, and in many of its symptoms this resembles the beginning of a meningitis. In fact, it happens occasionally that actual disease of the brain or the meninges, in the form of hemorrhagic encephalitis, brain abscess, or purulent meningitis, particularly after otitis, which is such a frequent complication, develops as the result of influenza.

Another of the many variations of the clinical picture of influenza which may be mentioned is associated chiefly with the stomach and intestines and produces severe gastric or enteric phenomena. Frequent vomiting, sensitiveness over the stomach, and watery or enteritic stools resembling raspberry jelly and streaked with blood—such are the manifestations of the **gastric form**.

In the uncomplicated form of influenza, if no other disturbance is superadded, the disease begins to subside after a few days and may leave only a feeling of lassitude and disinclination to exercise, which may persist for some time.

In all the other forms of influenza and whenever a complication develops the duration is more protracted; and sometimes the *prognosis*, which in the uncomplicated form is favorable, becomes very much more grave. In some cases of influenza the febrile exacerbations continue and the disease becomes subacute or even chronic.

With regard to the *prophylaxis*, it may be said that the danger of contagion can practically never be guarded against even by the strictest isolation.

The *treatment* in the individual case will be determined by whichever symptoms are most prominent. To control the fever, antipyrin, citrophen, lactophenin, salipyrin or aspirin, in doses adapted to the age, may be given several times a day in addition to hydropathic procedures, such as wet-packs and the like. The accompanying or consequent secondary symptoms require appropriate treatment. Owing to the frequency of aural complications the ears require special attention, and if the ear affection does not yield at once and the fever continues, it is always wise to call in the services of a specialist. During convalescence quinin preparations are given with good results.

The *diet* in influenza depends upon whether the appetite is increased or entirely destroyed. Uncomplicated cases merely require during convalescence the same dietetic and hygienic regime as after any other febrile disease. If the illness has been a long one and individual organs have been more or less damaged, an attempt must be made to repair the ravages of the disease by building up the patient's strength and by ordering a change of air, sending the patient to the country or to the South, and by giving nutritious food and tonics. The neuralgia which sometimes remains is successfully treated with quinin preparations, especially pyramidon.

Inguinal Hernia. See HERNIA, INGUINAL.

Insanity. See PSYCHOSES.

Insolation. See BRAIN, HYPEREMIA OF.

Insomnia (*Agrypnia*).—Insomnia occurs as a symptom in a number of diseases, not only in older children, but also in young infants, and may be due to a variety of causes.

Among infants, rachitis, insufficient nourishment or improper feeding, digestive disturbances with their sequelæ,

and not infrequently inflammatory conditions of the ears, may be enumerated as the most *important causes*. In many cases, especially in older children, insomnia is the result of nervous irritability which may be inherited. Predisposing factors are found in disturbances of the digestive organs; eating too hearty a meal in the evening, especially too much meat; adenoid vegetations; enlarged tonsils; and occasionally the irritation of intestinal parasites. Anemia, onanism, excitement and fatigue brought on by severe mental work or sometimes by the reading of an exciting book during the evening hours, should also be mentioned. Finally, one must bear in mind the influence of abnormally low or abnormally high temperature, which may disturb sleep through insufficient or excessive covering or clothing, or unsuitable temperature of the bedroom.

The *treatment* consists chiefly in removing any of the above-mentioned sleep-disturbing factors, hence an effort must be made to discover the cause of the insomnia. Before giving hypnotics, the effect of wearing a Priessnitz binder overnight, or a brief cold bath, or a warm bath at 27° R. (92.7° F.) for fifteen to twenty minutes in the evening before going to bed, should be tried, and the child should be kept as long as possible in the open air. If these measures prove ineffective, hypnotics must be resorted to. The mildest and the least harmful is a small cupful of camomile or orange-blossom tea given at bedtime.

Among medicinal remedies the following are recommended: bromids in the dose of 0.1 gm. (1½ gr.) for each year of age, either internally with sugar-water after the evening meal or in double the dose in the form of an enema; chloral hydrate—during the first year 0.1 gm. (1½ gr.) per dose up to 0.3 gm. (4½ gr.) per diem, and ascending gradually according to the age up to 0.5 gm. (7½ gr.) per dose, and 1.5 gm. (23 gr.) per diem in the tenth year—internally with a mucilaginous mixture or in double the dose as an enema; sulfonal or trional internally, as an enema; of the former, 0.1–0.15 to 0.2 gm. (1½ to 3 gr.); of the latter, 0.25–0.5 gm. (4 to 7½ gr.); and dormiol 0.5–1 gm. (7½ to 15 gr.) in a starch enema.

The following mixture is also said to be effective:

℞ Kal. bromid.,
Chloral hydrat., āā 2.0 (gr. xxx);
Extr. hyoscyami,
Extr. belladonnæ,
Extr. cannab. indic., āā 0.02 (gr. $\frac{1}{10}$);
Syr. flor. aurant., 30.0 (f ℥j);
Aq. destil., 40.0 (f ℥x)—M.

Sig. One teaspoonful every hour in the evening until the desired effect is produced.

Intertrigo (*Chafing*).—Wherever two cutaneous surfaces are in contact, which is the case in various regions of the body, especially at the anus, about the neck, at the bend of the thigh and fold of the knee, want of cleanliness, failure to wipe the child dry after its bath, and, in the case of fat children, the macerating action of the perspiration may produce at first redness of the skin, and later, from softening of the epidermis, superficial and sometimes deeper ulcerations. These cutaneous lesions extend as far as the rete Malpighii and bleed on the slightest movement; and owing to the pain occasioned may even cause a marked disturbance of the general health.

In children suffering from dyspepsia and enteritis, the alkaline discharges from the bowel not only induce the development of intertrigo, but also cause it to spread and give rise to the formation of extensive cutaneous ulcers.

Prophylaxis consists in observing the most scrupulous cleanliness in order to prevent the formation of intertrigo as much as possible. With fat children the opposed cutaneous surfaces must be dusted several times a day with dermatol, Engelhard's diachylon wound-powder, Skala's lanolin dusting-powder, or equal parts of tannoform and starch. The skin must be cleansed after every evacuation of the bladder and bowels with cool boiled water containing a few drops of lead water or Goulard's lead water and carefully dried with cotton, after which the intertriginous areas are covered with either Lassar's zinc paste, 1 per cent. zincepidermin, zinc oil [zinc oxid 30 gm. (1 oz.), olive oil 50 c.c. (1½ fl. oz.)]; or

℞ Ol. olivar.,
Liq. calcis, āā 100.0 (f℥iij)
Thymol, 0.10 (gr. iss);

or finally with Baby-Cosmetique or byrolin. When large areas of corium are denuded, ordinary ointments which contain insoluble constituents (zinc oxid and the like) are not well borne. In such cases Hebra's diachylon ointment (without any ethereal oil, however) and the so-called burn-liniment (equal parts of linseed oil and lime water—Carron oil) are to be recommended. Extensive ulcers must be dressed with compresses wrung out of 1 per cent. boric acid or salicylic acid solutions, or with absorbent gauze or Billroth-batiste saturated with aluminum acetate. Any existing intestinal disturbance requires special attention. In many cases intertrigo is followed by local or universal eczema (*vide*).

Intestinal Catarrh. See ENTERITIS, ACUTE, OF CHILDREN.

Intestinal Catarrh (*Follicular Enteritis*). See GASTRO-INTESTINAL DISEASES OF INFANTS.

Intestinal Obstruction (*Intussusception*).—Occlusion of the bowel is produced by a *variety of causes.* Thus there are rare cases of volvulus resulting from adhesions derived from fetal peritonitis, a Meckel's diverticulum, or a persistent omphalo-enteric duct; while in other cases the obstruction may be produced by fecal accumulations or by masses of nematode worms. An incarcerated hernia is a more frequent cause in infancy; but the most frequent of all, especially during the first year of life, is intussusception or invagination of the gut.

Intussusception consists in the invagination of a section of the intestine into the portion immediately below. Three forms are distinguished: **invagination of the ileum**; **ileocecal invagination** (Fig. 65), the most common of all; and, finally, **invagination of the colon** into the descending colon or even the sigmoid flexure. The causes of invagination are trau-

matism and the irritation of the intestinal wall by undigested food, especially after some antecedent disease of the intestines; sometimes abnormal length of the bowel and of the mesentery is the predisposing cause; but in many cases it is altogether impossible to determine the etiology.

The *symptoms* of intestinal occlusion often come on suddenly in the midst of perfect health and consist of violent colicky attacks and frequent vomiting, the rejected matter being at first mixed with remains of food, and later consisting only of mucus and bile. If the disease is protracted the

FIG. 65.—Schematic representation of an ileocecal invagination. The mucous membrane is indicated by the dotted line.

vomitus acquires a feculent odor, and finally becomes stercoraceous. The alvine discharges become more and more scanty, until finally the patient passes only blood-stained mucus without any flatus, and the tenesmus becomes intense. An important pathognomonic symptom is the occurrence of spasm of the rectum and gaping of the anus.

Early in the attack a cylindric, sausage-shaped, movable tumor usually can be demonstrated by palpation at the site of the invagination. In cases of invagination of the descending colon a tumor can sometimes be demonstrated by palpation and may be felt by digital examination—presenting

in the rectum. As the tympanites increases, rigidity of individual loops of intestine is at first observed in parts of the intestine (increased peristalsis), and as the symptoms become more intense the picture of perforative peritonitis or extreme collapse develops. The disease usually ends fatally in from four to six days. Occasionally the intussusception subsides spontaneously, and very rare cases have ended in recovery by separation of the gangrenous, invaginated portion of the gut. In such cases, however, cicatricial stenosis of the intestine usually remains. In the early stages of intussusception there is no fever, but with the development of additional complications the temperature begins to rise.

Treatment.—When a case of intussusception is seen early an effort should be made to release the invaginated portion. For this purpose enteroclysis with gradually increasing pressure, under anesthesia and with the pelvis in an elevated position, may be tried. If this prove unsuccessful after several repetitions, a further attempt at reduction may be made by forcing air into the bowel by means of a bellows while the child is still under the anesthetic. Should this procedure also fail, operative intervention must be resorted to at once, the abdomen being opened and the invagination released by direct manipulation.

In favorable cases, when the simpler plan of treatment is successful, the release of the invagination is indicated by the disappearance of the tumor, the relief of meteorism, the evacuation of feculent stools with gas, and the rapid subsidence of the symptoms of collapse, to the great relief of the physician and attendants; but one should always be prepared for a possible recurrence for several days to come. Hence during the stage of convalescence the bowel must be saved as much as possible by restricting the food, and be kept at rest with small doses of opium.

Intestinal Parasites (Figs. 66–70).—Under this heading the intestinal parasites which are frequently observed in childhood will be discussed in the order of their frequency.

Oxyuris Vermicularis (*Maw-worm, Thread-worm, Pin-worm,*

Seat-worm).—This parasite belongs to the group of nematodes and is extremely common in children, having its habitat especially in the colon and rectum.

The *symptoms* which this parasite causes are chiefly of a local nature and consist in itching in the rectum, which older children try to relieve by rubbing or manual interference. These entozoa wander out of the rectum and are therefore not infrequently found in little girls in the vagina, where they may set up a traumatic inflammation or lead to onanism.

FIG. 66.—Oxyuris vermicularis with ovum: *a*, Parasite, natural size (to the right, 2 males, to the left, a female): *b*, ovum (after Heller).

In boys they are sometimes found in the preputial sac, where the inflammation produces a tickling sensation and likewise leads to onanism. The administration of the customary anthelmintics, which will be discussed presently, produces but an indifferent result, and the condition should therefore be treated by local measures.

The local *treatment* consists in daily irrigation of the bowel for weeks either with plain cold water or water with the addition of thymol 0.10 gm. to 200 c.c. (1½ gr. to 6½ fl. oz.); liq. Burowi 15–20 to 1000 c.c. of water (4–5 fl. dr. to 1 qt.); 1 part of vinegar to 2 parts of water; ½ per cent. soap solution, from 1 to 3 liters, depending on the child's age; menthol 0.5 gm. to 100 c.c. (7½ gr. to 3 fl. oz.), or naphthalin 1 gm. to 50 c.c. of olive oil (15 gr. to 1½ fl. oz.); benzin 1.2 c.c. (18 min.), yolk of one egg and distilled water 120 c.c. (3 fl. oz. and 6 fl. dr.); or an enema consisting of a decoction of garlic. Internally naphthalin, in the dose of 0.05–0.1 gm. (¾ to 1½ gr.), for a child one year old; from 0.10–0.20 gm. (1½–3 gr.) for a child two to three years old; and from 0.20–0.40 gm. (3 to 6 gr.) for children of four to ten years of age, may be tried

after the bowels have been thoroughly emptied by means of a purge. This treatment should be repeated after a week, and, if necessary, after two weeks. To relieve the itching in the rectum, which is specially troublesome at night, blue ointment may be rubbed in. To guard against constant re-transmission of the parasites the anal region and the child's hands must be kept scrupulously clean. The nails must be cut short and the child must not be allowed to carry his hands to the nose or mouth. The clothing must be changed at frequent intervals.

Ascaris lumbricoides, or round-worm, is almost as common in children as the foregoing variety.

These entozoa chiefly inhabit the small intestine and rarely occur in large numbers; they may give rise to violent enteralgia (see COLIC) and even to intestinal occlusion. In their travels these parasites enter the stomach, and are not infrequently vomited; or they may wander through the esophagus into the oral and nasal cavities and into the larynx, where they give rise to violent attacks of suffocation, and may produce sudden death. In rare cases they get into the bile passages and occasionally into the cecum, where they give rise to

FIG. 67.—Trichocephalus dispar. To the left a parasite, natural size; to the right an ovum (after Küchenmeister).

a perityphlitis and may perforate the intestine and set up a peritonitis.

The rarest forms of parasites are the **trichocephalus dispar**, or whip-worm, and the **ankylostoma duodenale**. The former inhabits the cecum and ascending colon, the latter the duodenum. The *symptoms* produced by the presence of whip-worms consist chiefly of irritation of the intestine, producing an obstinate diarrhea, occasionally with secondary progressive anemia. The latter also is the chief symptom in ankylostomiasis, and is attended by pain in the region of the liver,

constipation, and the expulsion of blood-streaked mucus with the stools.

In ankylostomiasis and trichocephalus disease naphthalin is given internally in the same dose as recommended for the treatment of seat-worms, or the extract of male fern in the same dose as for tapeworm. Another remedy that is used against the three last-named parasites is the powdered leaves of wormseed (santonica), or its more palatable alkaloid, santonin, in the dose of 0.01–0.03 to 0.05 gm. ($\frac{1}{6}$–$\frac{1}{2}$ to $\frac{3}{4}$ gr.) three times a day. Santonin is also administered with calomel or in tablets of 0.01 gm. ($\frac{1}{6}$ gr.) each for several days, followed by a purge; or a solution of santonin in olive oil or castor oil, 0.02 gm. to 60 c.c. ($\frac{1}{3}$ gr. to 2 fl. oz.), one to two teaspoonfuls three or four times a day. It should be remarked that santonin must never be given on an empty stomach, because it has been repeatedly observed to produce toxic symptoms. The following prescription is also satisfactory:

℞ Benzonaphthol, 2.0 (ʒss);
Sacch. alb., 3.0 (gr. xlv);
Semin. cinæ, 1.0 (gr. xv).
M. div. in doses 20.
Sig. Three or four powders a day.

Tapeworms.—The commonest tapeworms in children are the *tænia mediocanellata* (or *saginata*), *tænia solium*, and, more rarely, *bothriocephalus latus*. The illustrations (Fig. 68) will enable the reader to recognize the individual parasites and their ova. The ability to do the latter is of the greatest importance, because none of the symptoms of helminthiasis already mentioned or to be mentioned are so convincing as to establish the diagnosis, concerning which positive information is obtained only by demonstrating the worms or proglottides in the stool, or by detecting the ova by a microscopic examination of the feces.

The *symptoms* produced by intestinal parasites consist, as has already been mentioned, either in itching of the rectum (in case of seat-worms) or digestive disturbances, and occasionally in characteristic abdominal pain of sudden onset, and

meteorism. With ankylostomiasis always, and with trichocephalus occasionally, progressive anemia and blood-streaked stools are present.

The reflex phenomena produced by these entozoa are in most cases very mild in character; and cases in which "parasitic irritation" produces inequality or dilatation of the pupils,

FIG. 68.—Ova: 1, of distoma hepaticum; 2, distoma lanceolatum; 3, tænia solium; 4, tænia saginata; 5, bothriocephalus latus; 6, oxyuris vermicularis; 7, trichocephalus dispar; 8, ascaris lumbricoides; 9, *a–f*, ankylostoma duodenale. (From 1 to 8, after Heller, × 350; 9, *a–f*, after Perroncito, × 300.)

vertigo, vomiting, St. Vitus' dance, or convulsions must be counted among rare occurrences. Tapeworm occasionally causes anemia, changeable appetite, vomiting, belching, nausea, yawning, vertigo, and headache.

The *treatment* of tapeworms consists in the administration of the following remedies: Twenty-four hours before the "cure" a powerful laxative is given and the diet is restricted.

During the "cure" the child is kept in bed; in the morning it is given a small cupful of tea with citric acid, and one-half hour later the anthelmintic that has been selected. The choice depends partly on the patient's age and partly on his docility.

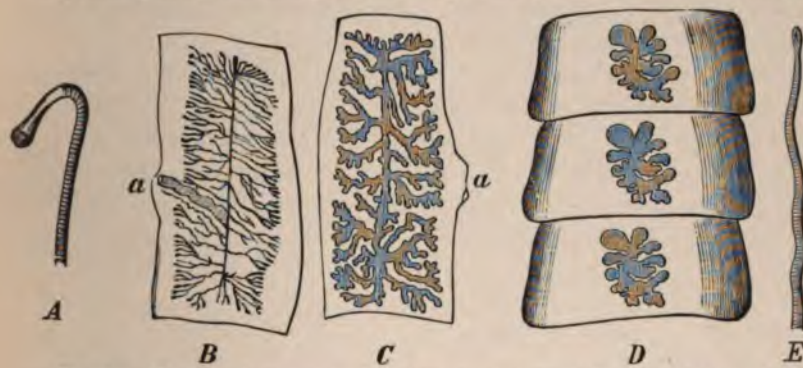


FIG. 69.—Heads and segments of various tapeworms: *A*, head of tænia saginata (after Edlessen); *E*, head of bothriocephalus latus (after Perroncito), both natural size; *B*, *C*, *D*, proglottides: *B*, of tænia saginata; *C*, of tænia solium; *D*, of bothriocephalus latus, × 6 (after Heller); *a*, *a*, genital orifices.

The preference should be given to those remedies which promise a good result when given in small doses; hence freshly prepared ethereal extract of male fern is to be recom-

FIG. 70.—*A*, head of tænia solium; *B*, head of tænia saginata.

mended. Of this preparation children from one to ten years of age receive 1.5 to 6 gm. (22½ gr. to 1½ dr.) in three doses, one every one-half hour, with a few drops of oil of peppermint, or put up in gelatin capsules, or in the form of an

electuary with honey. Other remedies selected are extract. aspidii spinulosi with syrup cort. aurant., āā 3 to 6 gm. (45 gr. to 1½ dr.) per diem; thymol 0.5 to 1 gm. (7½–15 gr.) three or four times a day; naphthalin in the same dose, and pelletierine tannate 0.05 to 0.10 gm. (¾–1½ gr.) for each year of the child's age.

The root of pomegranate is also deservedly popular and is particularly suitable for older children. It is prescribed as follows:

℞ Cort granati, 10.0 to 30.0 (ʒiiss to ʒviiss);
Aqua dest., 300.0 (fʒixss).
Macerate for twenty-four hours and boil down to 180.0 (fʒvi); then add syrup of ginger 20.0 (fʒv).—M.
Sig. To be taken in three doses in the course of an hour.

Gelatin capsules containing ethereal extract of male fern and castor oil (Helfenberg), such as are to be had in the trade, or Helfenberg's "Bandwurmtitrol," are also to be recommended. Other preparations, such as kooso 4 to 10 gm. (1–2½ dr.), or kamala 5 to 10 gm. (75 gr. to 2½ dr.), given in the form of an electuary with honey 30 gm. (1 fl. oz.), taken in two or three doses, are uncertain in their action. Whenever a tapeworm is to be expelled and the bowels do not move between one and two hours after the last dose of the vermifuge has been given, it should be an invariable rule to administer a purge. If after another hour no effect is produced, it is often possible to expel the head of the tapeworm by copious irrigation of the bowel. But even if the head is not found, the treatment should not be repeated unless some disturbance of the general condition again develops or proglottides are passed.

As the *treatment* for tapeworm is by no means unattended by constitutional disturbances, it is contraindicated during or soon after an attack of gastro-intestinal catarrh, perityphlitis, cardiac or renal disease, anemia, and tuberculosis.

Intestines, Inflammation of. See ENTERITIS, also GASTRO-INTESTINAL DISEASES OF INFANTS.

Intussusception. See INTESTINAL OBSTRUCTION.

Invagination. See INTESTINAL OBSTRUCTION.

Irritable Breast. See MASTODYNIA.

Itch. See SCABIES.

Jaundice, Catarrhal.—Except in cases of icterus neonatorum and those cases in which it is merely a symptom of a pyemic infection in newborn or older children, or develops as the result of phosphorus poisoning, jaundice is to be regarded as practically always due to an acute gastroduodenitis. When, as rarely happens, a large number of cases of the disease develop at the same time within a limited area, one may speak of an epidemic form, which appears to be caused by some specific micro-organism (putrefaction germs).

The *symptoms* of the disease at first conform to those of acute gastric catarrh and consist in vomiting, nausea, distention and sensitiveness of the stomach, and occasionally a rise in temperature. When the bowel is involved, diarrhea is also present. Gradually, and subsequently to the beginning of the disease, the icteroid discoloration becomes noticeable, especially in the scleræ, and soon afterward the skin of the entire body turns yellow.

The increase in the external signs is accompanied by certain other changes. The general condition is markedly affected; the patients lose their appetite completely, thirst is increased, and the tongue becomes heavily coated and dry. The liver enlarges and becomes distinctly palpable and painful; sometimes the gall-bladder, which is enlarged and sensitive to pressure, also can be felt. The stools present the characteristic acholic, whitish color (clay-colored); they may be frequent and diarrheal, or again scanty and compact; in most cases they are extremely offensive. The urine is concentrated and of a dark brown color. Owing to the absorption of bile acids, and usually in older children only,

retardation of the pulse and pruritus, which is often very troublesome, develop.

The *prognosis* is favorable. The duration of the disease is variable; in many cases it is prolonged for months.

The *treatment*, which, especially during the initial stage, is the same as that of acute gastric catarrh, is dietetic and, if necessary, purgative. As soon as the morbid process increases in severity, fats must be excluded from the diet altogether, and this diet should be rigorously adhered to until the appetite begins to return.

It is best to avoid all kinds of meats in the beginning and to allow broths free from fat, milk, eggs, coffee with milk, cocoa and tea, easily digestible articles prepared with milk and flour, zwieback, and preserves. Alcohol and drugs containing alcohol must, of course, be avoided.

The beverages to be recommended are alkaline mineral waters (Krondorf, Giesshübl, Bilin, Rohitsch, etc.).

Under certain circumstances, especially in cases of obstinate constipation, the patient should be ordered to take every morning from 100 to 200 c.c. (3–6 fl. oz.) of Karlsbad water (Mühlbrunnen) at body-temperature for a period of one to two weeks. During the first days of the disease active purgatives are often necessary, such as powder of rhubarb, a knife-point morning and evening; tincture of rhubarb, a teaspoonful two or three times a day; decoction of tamarind pulp, 5 gm. to 100 c.c. (75 gr. to 3 fl. oz.); Dallmann's essence of tamarind or Erba's extract, one teaspoonful to one tablespoonful twice a day; cascara sagrada in pills, tabloids, or fluidextract (10 to 20 drops in a teaspoonful of sweetened water once or twice a day); Liebe's cascara wine or syrup of figs (one or two teaspoonfuls at bedtime).

In obstinate cases a daily cool irrigation (15° to 18° R.—66° to 72.5° F.) of from ½ to 1 liter of water may be recommended.

Local treatment, consisting of faradization of the gall-bladder, with the electrodes applied to the gall-bladder region, and massage with the patient in a warm bath, is often followed by good effects. To relieve pruritus one may use

lukewarm baths containing soda or bran, ablutions with vinegar, spraying the skin with French brandy, alcoholic solution of 1 per cent. menthol or 2 per cent. salicylic acid by means of an atomizer, and inunctions with bacon or some other kind of fat.

Jaundice of the Newborn. See ICTERUS NEONATORUM.

Keratitis. See EYE, DISEASES OF.

Kernig's Symptom.—Kernig's symptom is said to be present when, in the absence of any rigidity of the legs while the child lies quietly on its back, rigidity at once appears

FIG. 71.—Kernig's sign, showing the strong contraction of the flexors on attempting to extend the leg (Sahli).

when the child is made to sit up or the thighs are flexed at the hip at a right angle or even sometimes before this extension is reached (Fig. 71). A flexion contracture occurs at the knee-joint and offers marked resistance to extension of the leg, but disappears as soon as the child again assumes a recumbent posture.

This *symptom* is not pathognomonic of any one form of meningitis, being observed in a variety of central affections.

Kidney, Hemorrhage from. See HEMORRHAGE, RENAL.

Kidney, Inflammation of. See NEPHRITIS.

Labia Minora, Epithelial Adhesion of.—This condition may be discovered accidentally, but sometimes an examination is suggested by restlessness and signs of pain, especially during the evacuation of urine.

The epithelial adhesion usually takes the form of a delicate, thin, transparent membrane, which can readily be divided with the head of a probe, the trivial operation being attended by an insignificant hemorrhage. To prevent the adhesions from forming again, a cotton pledget saturated with 5 to 10 per cent. borated vaselin is inserted between the raw edges and left in place for a few days.

Lacunar Angina. See ANGINA, CHRONIC LACUNAR.

La Grippe. See INFLUENZA.

Laryngitis, Acute Catarrhal.—This disease is *caused* chiefly by sudden changes of temperature and affects particularly young, debilitated children and children suffering from some chronic catarrhal affection of the nasal or pharyngeal mucous membrane and that of the tonsils. It occurs secondarily in infectious diseases in which the infection of the respiratory mucous membrane is a dominant feature, as in measles, whooping-cough and influenza.

In the *laryngoscopic picture* the laryngeal mucous membrane appears reddened and swollen. The vocal cords are more or less reddened and sluggish in their movements, and in places covered with a tenacious secretion. In some cases the false vocal cords, and in some others the subchordal tissue is chiefly affected (Figs. 72, 73). (See also LARYNGITIS, SUBCHORDAL). Acute laryngitis is sometimes preceded by prodromata, such as coryza, slight hoarseness, cough, and a slight disturbance of the general condition. The striking clinical phenomena which make up the *picture* of an attack of "false

croup," and which are caused by the acute inflammation of the mucous membrane and the narrowness of the larynx in young children, consist in sudden dyspnea, occurring usually at night, with a deep, barking cough and long-drawn inspiration. The sudden failure of respiration is followed by symptoms of great unrest, an anxious expression, and pallor or cyanosis of the face, which is covered with perspiration. The attack is most alarming and variable in duration; as it begins to subside, the voice, which was quite hoarse, and the cough become louder, the rapid breathing becomes quieter and deeper, the general restlessness decreases, and the exhausted child falls into a deep sleep. Sometimes only one such attack takes place, and the sleep which follows is merely disturbed by harsher coughing and snoring; or the attack is

FIG. 72.—Laryngitis involving chiefly the false cords as the cause of false croup.

FIG. 73.—Laryngitis involving chiefly the subchordal tissue as the cause of false croup.

repeated after a variable time; but the second one is rarely as severe as the first. When the child awakes after a longer sleep than usual, the voice is usually still slightly muffled and the cough is still hoarse, although it has begun to loosen and to be productive of mucus. Sometimes after a period of some hours, and again preferably during the night, but at a later hour than the first time, another paroxysm of false croup takes place; but this second, like all the succeeding attacks, is less severe than the first.

In addition to these well-marked clinical phenomena catarrhal laryngitis, as has been mentioned, is usually attended by coryza, and the pharyngeal organs are red and inflamed. Auscultation during the croupy attack reveals merely the transmitted sounds of the loud stenotic breathing, but when the laryngitis is complicated by a bronchial catarrh, dry râles

at first, and later moist râles are heard. Catarrhal laryngitis is usually attended by very little fever; if, however, it is followed by catarrh of other structures, fluctuations in temperature occur, corresponding to the extent of the morbid process.

In some cases it is difficult to decide between false croup and diphtheritic croup. The *differential diagnosis* has been discussed under the heading of DIPHTHERIA. For this reason it is well to avoid dogmatically giving an absolutely favorable *prognosis* in a case of false croup, a certain degree of reserve being advisable. In many cases a predisposition to the disease and to recurrent attacks is found in all the children of a family.

Treatment.—The chief indication in treatment is to relieve the attacks of stenosis. Warm drinks, such as milk, sweetened water, or a tea of some sort, are useful; also warm compresses or poultices applied to the throat. The latter must be changed as frequently as possible and kept up until the dyspnea diminishes, after which the wet compresses may be changed at longer intervals. If these procedures fail to moderate the attack, retching or even vomiting induced by irritating the base of the tongue with the handle of a spoon or a feather is sometimes followed by relief. In addition to these measures a constant evaporation of water must be kept up in the room. This may be effected by immersing red-hot flat-irons in a pail of water, keeping several cloths continuously saturated with hot water, or by the atomization of warm water by means of a spray-apparatus or a Siegle or Bulling inhaler.

In order to encourage sweating, the patient is wrapped in warm blankets, taking care not to wrap the thorax too tightly.

When the cough is distressing, sedatives should be prescribed: cherry-laurel water, 2–5 to 10 drops in a teaspoonful of sweetened water every hour or two; codeine phosphate 0.05 to 0.10 gm. ($\frac{3}{4}$–1$\frac{1}{2}$ gr.) to 10 c.c. (2$\frac{1}{2}$ fl. dr.) cherry-laurel water; or peronin and dionin in doses of 0.005 to 0.01 gm. ($\frac{1}{13}$–$\frac{1}{7}$ gr.).

With nervous children antipyrin in doses suited to the age, sometimes in combination with bromids 0.25 to 0.50 gm. (4–7½ gr.), one or two powders during the course of one or two hours in the evening, acts very favorably. Although the child feels quite well during the day, he must be kept in bed in a well-aired room at a normal temperature until he has entirely recovered from the catarrh. As long as there is any tendency to stenotic attacks, some one must watch by the patient's bedside during the night, and as soon as the breathing becomes rougher or the child begins to snore, he must be wakened and made to take a drink. This is usually necessary three or four hours after the child has gone to sleep, when the inspissated secretion has had time to collect.

The nasal mucous membrane, which is usually covered with dry secretions, must be kept open by painting it with 5 per cent. borated vaselin.

To guard the child *against future attacks* rational hardening procedures, plenty of fresh air, ventilation and moderate temperature for the bedroom, a sojourn during the summer in some wooded region, and especially brine- and sea-baths are to be recommended.

Laryngitis, Chronic.—The *symptoms* of this disease in children are practically the same as in adults. It occurs chiefly in children with adenoid vegetations or chronic rhinitis, or some lymphatic disease resting on a scrofulous base. A mistake in the *diagnosis* is conceivable in the case of children who are at the stage when the voice changes; a laryngoscopic examination, however, will give positive information on this point as well as on the severity of the disease.

The chief *clinical features* in chronic laryngitis are the hoarseness and the frequent dry, hacking cough. As chronic laryngitis is almost always associated with pharyngeal catarrh, the child often complains of a dryness in the throat and sometimes of difficulty in swallowing. External influences may cause an exacerbation of a chronic catarrh with the symptoms of acute laryngitis.

Treatment must be directed chiefly against the primary

trouble, whether it be demonstrated or merely surmised. In addition to hardening procedures the underlying condition must be combated by means of iodin, brine- or sea-baths, constant residence in the country, and appropriate tonic remedies internally. Locally, inhalations with a 1 per cent. saline solution or some mineral water, such as Gleichenberg, Ems, Selters, or Wiesbadener Kochsalzbrunnen, may be ordered, and the same waters may be used for drinking.

When the secretion is profuse, a few drops of rectified oil of turpentine, oil of pinus pumilio, or oil of juniper may be added to the inhalation fluid. Bulling's inhalation apparatus has recently been used with good results. Priessnitz compresses may also be applied to the throat.

Laryngitis Crouposa. See DIPHTHERIA.

Laryngitis, Spasmodic. See LARYNGOSPASM.

Laryngitis Subchordalis.—This is a special form of catarrhal disease of the larynx. It begins acutely, and in the *laryngoscopic picture* the laryngeal mucous membrane and the vocal cords show but little change. Underneath the latter, however, appear two prominent inflamed folds of

FIG. 74.—Laryngoscopic picture of laryngitis subchordalis.

mucous membrane (Fig. 74). As the vocal cords are but little involved, the voice is only slightly or not at all affected, but the stenosis below the level of the vocal cords causes the same respiratory disturbance and the same attacks as in false croup (see LARYNGITIS, ACUTE).

The *symptoms* in this disease are often quite alarming, and a long time may elapse before the respiration becomes entirely normal and inaudible again. The disease in its initial stages

closely resembles primary laryngitis, and requires the same treatment as acute catarrhal laryngitis.

Laryngospasm.—The *attacks* of asphyxia which characterize this condition come on quite suddenly and even in the midst of apparently perfect health. It usually occurs in children more than six months of age. The chief predisposing *cause* is rickets, although a hereditary nervous taint, general irritability, as well as digestive disturbance, also appear to be etiologic factors.

In some cases the tonic spasm in the muscles of the glottis is the only *symptom*, or it may represent an initial or concomitant symptom of eclampsia.

The attack may occur suddenly, during sleep or immediately after waking, or sometimes while awake, being excited by fright, a severe crying spell, or other source of excitement. The face becomes deeply cyanosed, the veins are visible and full to bursting, the brow is covered with perspiration, the eyeballs bulge, the mouth is tightly closed, and the head is frequently convulsively retracted. After variable periods, sometimes of several minutes, during which the symptoms of asphyxia become more pronounced, a loud, shrill, crowing inspiration occurs, and is followed at first by short, and later by long and deep respirations.

The attacks may occur in immediate succession or may be repeated at longer intervals. In many cases the laryngospastic attack is followed by convulsions, which are in part due to the venous hyperemia of the brain (see CONVULSIONS). During the intervals of freedom there may not be any noticeable disturbance of the general condition, except in the case of children in whom the disease which is responsible for the laryngospasm in itself causes other marked disturbances.

Laryngospasm is often a serious complication in rachitis, as death not infrequently occurs during a violent attack. In some cases these attacks continue for months, varying in number and intensity; and finally leave the child for years afterward in a state of nervous irritability or even the sub-

ject of epilepsy. (With reference to the connection between LARYNGOSPASM and TETANY, see the latter disease.)

Treatment.—During an attack the most important thing to do is to bring forward the tongue, which is convulsively retracted, by introducing the finger or a spatula and at the same time depressing the base of the tongue. Owing to the spasm of the muscles of the jaw, the mouth must be held open by force. Sometimes drawing the tongue forward does not suffice to restore respiration, and forcible mouth-to-mouth insufflation must be employed after loosening the clothing and opening the windows in order to give as free access as possible to the air. At the same time the body should be rubbed with wet cloths or douched with cold water.

To prevent recurrence of the attacks as much as possible sedatives such as are discussed under the heading of CONVULSIONS must be administered.

To satisfy the causal indications a great variety of etiologic factors must be taken into account. Special attention must be devoted to the rachitic diseases, and in these nervous forms of convulsions rapid improvement is often achieved by means of phosphorus (see RACHITIS).

If the laryngospastic attack, as is so often the case in convulsions, is due to overloading of the stomach or some acute intestinal disturbance, the stomach and bowels must be emptied at once by means of lavage or artificially induced vomiting, and by the administration of a calomel purge, castor oil, Kindermet, or some other rapidly acting purgative, combined with colonic irrigation.

Children predisposed to laryngospasm should live in well-ventilated rooms and spend as much time as possible in the open air, but must be kept under constant supervision and protected against any form of external stimulation.

The *diet* must be adapted to the child's age. Artificially-fed infants should, whenever possible, be returned to the breast; or at least the feeding must be scrupulously regulated. In the case of older children the diet needs careful control.

Larynx, Inflammation of. See LARYNGITIS.

Larynx, Spasm of. See LARYNGOSPASM.

Lavage, Gastric.—Lavage is an efficient and rapid means of removing irritating and fermenting stomach contents or

FIG. 75.—Lavage for an infant: I, Position of funnel when the stomach is to be filled; II, when the stomach is to be emptied.

poisonous substances that have been swallowed. In performing lavage on an infant the child may be laid upon its back or, as is almost always done in the case of older children, placed in a semirecumbent posture. For an infant a large Nélaton catheter (as, for example, No. 12) is used, and for older children a soft stomach-tube of suitable size. Before it is

introduced, the instrument is immersed for a few minutes in warm water, which makes it pliable and does away with the necessity of lubrication. It is well to ascertain beforehand the distance from the alveolar margin to the cardia, which corresponds to the distance from the glabella to the xiphoid process, and to mark this length upon the tube. The stomach tube is then connected by means of a piece of glass tubing with a rubber tube 80 cm. in length, to which a large funnel of glass or enameled tin is attached. As soon as the tube has entered the lower part of the esophagus, bubbles of gas appear in the funnel, and soon afterward the stomach contents begin to rise. After evacuating the contents by lowering the funnel, the filling and emptying of the stomach is begun by gradually raising and lowering the funnel until the fluid is returned clear or almost clear (see Fig. 75).

At first physiologic salt solution [sodium chlorid 0.6 gm. (9 gr.) to 100 c.c. of water] at body-temperature, or a 0.7 per cent. sodium carbonate solution should be used. Depending on the diseases in which lavage is indicated (see DYSPEPSIA; GASTRITIS, ACUTE; CHOLERA INFANTUM; and POISONING) various drugs may be added to the fluid. As a rule lavage is very easily carried out in infants, but for older children who already have teeth the procedure is often difficult, and frequently requires the use of the mouth-gag.

Leptothrix Angina. See ANGINA, CHRONIC LEPTOTHRIX.

Leukemia.—Regardless of the origin, whether lymphatic or myeloid, we may distinguish an acute and a chronic form of leukemia, depending upon the course of the disease. The two forms, therefore, differ only with respect to the *clinical course*—that is to say, in the acute form cachexia develops much more rapidly than in the chronic form, and soon ends in death.

The disease itself usually begins insidiously; soon inflammations and hemorrhages from the oral and nasal mucous membranes and into the skin are superadded.

Before long, swelling of the glandular tissue of the tongue, of the tonsils, of the lacrimal glands, and of the lymph glands, and especially abnormal enlargement of the liver and spleen, develop (see Fig. 76).

The color of the skin becomes more and more bluish-white and waxy, and owing partly to the respiratory and digestive disturbances caused by the glandular swelling, and partly to the rapidly increasing cachexia and the development of com-

FIG. 76.—Child one year old with acute leukemia: Death after four months. The boundaries of the liver and spleen are indicated.

plications, the disease almost always *ends fatally* after a variable duration.

In the form known as myelogenic leukemia pain in the sternum and in the long bones is complained of in addition to the above symptoms

Even in the presence of the above-mentioned clinical symptoms an absolutely positive *diagnosis* can only be made by means of a microscopic examination of the blood, which in

the fresh preparation shows a more or less marked increase in the number of the leukocytes [lymphocytes].

In doubtful cases dried blood preparations should be submitted to an expert hematologist to determine whether the characteristic blood-changes are present.

The *prognosis* of leukemia is almost always unfavorable.

Treatment.—Preparations of arsenic, iron, quinin, and cod-liver oil may be given, but neither internal medication nor the necessary measures to improve the surroundings and the nutrition promise even a partial success.

Lingua Geographica. See TONGUE, GEOGRAPHICAL.

Lingual Adhesion. See TONGUE-TIE.

Little's Disease.—Spastic diplegia or paraplegia is a form of cerebral palsy encountered in the first few years of life. The *causes* of the disease are injuries to the skull by abnormal position at birth, protracted or precipitate labor, and injuries from manual or instrumental interference during delivery. Severe congenital asphyxia in premature births appears to be an important factor in the production of Little's disease in such children. The *symptoms* are best characterized by the term "universal spasticity or rigidity." Although the condition may escape an unpractised eye for some time, certain phenomena develop after weeks or months which cannot fail to attract attention. It may first be noticed, perhaps, that the limbs of the child are stiff and flexed, the spasticity being most noticeable in the lower extremities, so that during certain manipulations, as in bathing or changing the child, the legs can be extended or straightened out only with great difficulty, and at once return to their former position of flexion and close apposition.

As the baby grows older it is noticed that it cannot sit up when carried; the head falls forward and the legs persist in the contracted position, drawn up against the abdomen.

In the case of an older child, when an attempt is made to make it stand, the legs either persistently retain the pathog-

nomonic position, or the child stands on its toes with the thighs held close together or even crossed (see Figs. 77, 78). This characteristic position of the legs is also retained if the child ever attempts to walk. It walks on the tips of its toes, taking short steps and convulsively crossing the legs (Fig. 79).

The upper extremities are rarely involved to the same degree as the lower; but when they are, the same spastic

FIG. 77.—Little's disease in a girl two years old.

contraction is observed. In many cases this condition of the arms improves, but the spastic condition of the lower extremities rarely diminishes, or only to a very slight degree. In the course of years equinovarus or equinovalgus develops, with atrophy from disuse and increased reflexes, but without loss of sensation.

As a rule disturbances of the intelligence and of speech

become apparent in the subsequent course of the disease. Although these defects sometimes show signs of improvement in the course of years, the motor disturbances of the lower extremities and the strabismus usually persist. The functions of the bladder and rectum are not affected. A great many

FIG. 78.—Ten-year-old girl with Little's disease.

FIG. 79.—Twelve-year-old boy with Little's disease.

variations of the clinical picture here described may occur, both as regards the extent and the intensity of the paralysis.

Treatment.—As the child grows older, the treatment will consist chiefly in adopting orthopedic measures. To a certain extent the development of spasticity can be combated by

frequent, protracted baths and by massage and passive movements. In some cases a surgical operation, such as tenotomy or the transplanting of tendons, is followed by a certain measure of success. In those cases in which the body, on account of paresis of the extensor muscles of the back cannot be held erect, the entire trunk may be put into a corset, which is fastened to some apparatus applied to the legs.

Liver Cirrhosis.—Cirrhosis of the liver is much more rare in children than in adults because the most frequent cause, the abuse of alcohol, is comparatively rare in childhood. Of the two forms of cirrhosis, interstitial hepatitis with enlargement of the liver (**hypertrophic cirrhosis**) is distinctly more frequent than the **atrophic granular form.** In order to guard against mistakes, however, it should be borne in mind that the margin of the liver in a normal child is lower than in the adult, so that even a slight swelling can be much more distinctly felt.

The moderate swelling of the liver which occurs in the course of acute infectious diseases, and which is accompanied by slight jaundice, may also persist as an interstitial hepatitis. When cirrhosis of the liver does occur it is comparatively often found to be due to the abuse of alcohol. In some cases the *etiology* is in doubt, and it is quite possible that intestinal toxins, malaria, or hereditary syphilis, particularly in earliest infancy, may be contributary causes.

The chronic form of the disease develops with the *symptoms* of gastric or intestinal disturbance. Gradually the increase in size of the abdomen becomes noticeable, and the indurated liver with its sharp edges projects far below the costal margin and can be distinctly palpated. As a result of the circulatory disturbances in the portal circulation a constantly increasing ascites develops, and the enlargement of the spleen and venous hyperemia may lead to the occurrence of internal hemorrhages, with venous dilatations, petechial hemorrhages into the skin, and secondary edema.

The *prognosis* of the disease is most unfavorable, as it ends fatally after a duration of months.

The chief point in *treatment* is to provide a bland, unirritating diet with special reference to the existing gastro-intestinal catarrh. Meat must be restricted; but milk, carbohydrates, easily digestible vegetables, and stewed fruit, on the other hand, may be allowed in abundance. The patient's tolerance of fat (butter) must be determined by actual trial.

In most cases a drinking-cure with from 50 to 100 c.c. (1½–3 fl. oz.) of Karlsbad water, Mühlbrunnen or Schlossbrunnen, at room-temperature, taken early in the morning on an empty stomach, is indicated both in hypertrophic biliary cirrhosis, and in the atrophic form in the stage of ascites.

In the presence of meteorism and constipation mild laxatives must be ordered. Of these calomel is to be particularly recommended in hypertrophic cirrhosis. Other remedies that may be tried, especially in the presence of syphilis, are sodium iodid 0.5 to 1 gm. (8–15 gr.) per diem; or tablets of iodalbacid 0.5 gm. (7½ gr.) each, three tablets a day; or equal parts of syrup of iodide of iron and simple syrup, 10 drops twice a day. When ascites is present, digitalis or some other cardiac tonic and diuretics are indicated [solution of potassium acetate 2–5 gm. to 100 c.c. (30–75 gr. to 3 fl. oz.), diuretin 0.20–0.50 gm. (3–7½ gr.) to the dose, and agurin 0.10 to 0.25 gm. (1½–4 gr.) with peppermint water, three or four times a day]. A warm bath followed by a wet pack is also recommended. In cases of excessive ascites puncture of the abdomen must not be omitted if the heart action and respiration are impeded.

Lobar Pneumonia. See PNEUMONIA, CROUPOUS.

Lobular Pneumonia. See PNEUMONIA, LOBULAR.

Lockjaw. See TETANUS NEONATORUM.

Low Vitality. See DEBILITAS VITÆ.

Lues. See SYPHILIS.

Lumbar Puncture.—The procedure which is now frequently practised in diseases of the brain and spinal cord and

FIG. 80.—Method of introducing needle in lumbar puncture: Child in lying posture (Boston).

in hydrocephalus, partly for therapeutic reasons, but frequently for the purpose of diagnosis or differential diagnosis, was first practised by Quincke, and is performed as follows: The child

FIG. 81.—Method of introducing needle in lumbar puncture: Child in sitting posture (Boston).

is placed either in the lateral or in the sitting posture with well-rounded back (Figs. 80 and 81). The points of election

lie between the spinous processes of the fourth and fifth lumbar vertebræ or between the last lumbar and the first sacral vertebræ. The site of the puncture is first disinfected with alcohol, ether, and bichlorid of mercury, and a thin trocar or the needle of a serum syringe, which has also been previously disinfected with great care, is inserted to the depth of a few centimeters in the median line exactly at the point indicated (see Figs. 82 and 83). As soon as the resistance ceases to be felt,

FIG. 82.—Anatomical preparation from a child twenty-one months old to explain the method of lumbar puncture: The trocar has been inserted between the fourth and fifth spinous processes (½ natural size).

FIG. 83.—The lumbar portion of the spinal column from a child twelve years of age (after Quincke).

the stylus of the trochar is withdrawn and the fluid is collected in a sterilized test-tube, which must be at once stopped with cotton. If no cerebrospinal fluid at all is obtained, or if the amount is insufficient, the trochar must be moved forward and backward until a position has been found in which the flow is unimpeded. In order to avoid any unpleasant accidents not more than 30 to 50 c.c., depending on the child's age, should be evacuated at any one time. After the canula has been removed, the small puncture is cleansed with

a cotton pledget saturated with bichlorid solution and covered with an antiseptic dressing or sealed with iodoform collodion. Lumbar puncture has at most a diagnostic value in many diseases of the brain and spinal cord. In chronic hydrocephalus the procedure undoubtedly has a favorable effect by relieving the pressure; and in some cases, as in serous meningitis, it may actually save life. As it is a simple and easy procedure, it is indicated in many diseases of the brain and spinal cord.

Lungs, Inflammation of. See PNEUMONIA.

Lupus.—This disease, which is also known as skin tuberculosis, occurs either *primarily* as the result of inoculation

FIG. 84.—Lupus vulgaris (Stelwagon).

from without or *secondarily* in the course of some scrofulous or tuberculous disease elsewhere in the body. It begins as an eruption of disseminated, brownish-red nodules, at first situated within the skin and gradually rising above its level. By confluence of the nodules the disease spreads usually in the lateral direction or, if the lesions project above the level of the skin, in the form of verrucose or papillomatous tumors. The color is red or bluish-red and the growths are very hard in structure. Sometimes ulceration takes place and may extend into the depths of the tissue, resulting in peripheral spread and the formation of a disfiguring, radiating scar at the center.

The eruption of lupus is usually seen on the face, particularly about the nose, lips, and cheeks (Fig. 84), on the hands

and rarely on the trunk and mucous membranes (in the larynx). The *course* is chronic and is subject to relapses.

Treatment.—Of the methods employed to effect a radical cure the following are the most rapid: extirpation of the part of the skin affected with lupus, followed by a plastic operation to cover the denuded area, and phototherapy with ultraviolet rays (Finsen), a method which is universally acknowledged to yield good results.

Small patches of lupus and beginning foci of the disease may be removed with a curet or by cauterizing with Paquelin's cautery.

As regards internal medication, the presence or imminent danger of a tuberculous disease calls for a nutritious diet and the use of iron or cod-liver oil to improve the strength (see the treatment of TUBERCULOSIS).

Luxation of the Hip, Congenital. See HIP, CONGENITAL DISLOCATION OF.

Lymph Glands, Enlargement of. See LYMPHADENITIS.

Lymphadenitis.—Enlargement of the lymph glands, sometimes going on to inflammation and suppuration, may originate from the most *trivial causes*, but there is probably in most cases a certain predisposition, which is only too frequent among so-called lymphatic or scrofulous children and those who have a tendency to tuberculosis. The swelling and inflammation usually develop secondarily and indirectly by way of the lymph channels, and may owe their origin to the most insignificant scratch. Thus, more or less marked glandular enlargement is observed but too frequently as the result of skin diseases in the adjoining portions of the body, especially such as cause marked itching or are due to the presence of parasites (itch, pediculi, etc.). *Other causes* of glandular swelling in children are carious teeth, seborrhea of the scalp, slight ulcers, eczematous lesions following artificial perforation of the ear, or other slight traumatisms (vaccination), and, finally, diseases of the mucous membranes of an

infectious origin. The glandular swelling may disappear without leaving a trace, either at once or some time after the removal of the above-mentioned causes; or a secondary infection may cause inflammation of the glands with ultimate formation of an abscess. In very unfavorable cases caseation or tubercle-formation may take place in the glands, which then represent either a primary or secondary focus, from which grave and often fatal sequelæ develop (Fig. 85).

In acute cases of glandular enlargement the *treatment* is begun by the application of ice or a cold compress wrung

FIG. 85.—Girl, twelve years of age, with numerous glandular enlargements the result of pediculosis.

out of lead acetate solution, dilute aluminum acetate, or a 1 : 1000 solution of bichlorid of mercury. When redness of the skin and softening of the gland announce the beginning of suppuration the process should be hastened by the application of warm compresses. Chronic enlargement, as well as the predisposing condition, requires appropriate treatment, which is identical with that of scrofulosis and has as its chief indication the improvement of the general health. The body-weight must be carefully controlled. Locally may be used 6 per cent. iodovasogen; equal parts of tincture of iodin

and tincture of galls; iodin and potassium iodid ointment iodin [0.10 gm. (1½ gr.), potassium iodid 1 gm. (15 gr.), simple ointment 10 gm. (2½ dr.)], or an ointment consisting of red iodid of mercury 0.25 gm. (4 gr.) to 20 gm. (5 dr.) of lanolin.

The Cyclic Soft-soap Cure (see SOFT-SOAP TREATMENT) has also been used with success, especially in cases of mul-

FIG. 86.—Case of multiple lymphangioma in a boy six years of age: The picture shows the enlargement of the left cheek and the bulging of the floor of the mouth alongside the tongue. The left ear and part of the back were also involved.

tiple glandular swelling. Of value internally are arsenic preparations (Fowler's solution) and preparations or mineral waters containing iron and arsenic; easily digestible iron preparations (hematogen, eubiose, hemalbumin, or liquor ferri manganopeptonati, the latter in teaspoonful doses, three or four times a day after meals; potassium iodid in 1 to 2

per cent. solution, one teaspoonful every three hours; or iodalbacid, two or three tablets a day. Microscopic examination of the blood should never be neglected in cases of glandular swelling.

As soon as indubitable signs of suppuration in the glands are present, the abscess should be incised rather than wait for spontaneous rupture. Individual, chronically enlarged glands which have resisted every mode of treatment must be extirpated.

For prophylactic reasons, the most insignificant glandular swelling must receive careful investigation, which should be

FIG. 87.—Hygroma cysticum colli congenitum in a girl three years of age.

extended to the patient's residence and general surroundings. Damp houses in the city or in the country are particularly to be avoided. Too much starchy food in the dietary must be strictly prohibited.

Lymphangioma.—Cavernous tumors of the lymphatic vessels resemble vascular tumors, angiomata and telangiectatic tumors, but are less frequent. They differ from angiomata in that they consist of dilated lymph vessels and communicating lymph spaces. The tumors are covered with normal skin, are compressible, are found scattered here and

there in the skin, and when injured discharge a yellowish lymphatic fluid (Fig. 86).

The *treatment* is exactly the same as that for angiomata (*vide*). (See ELEPHANTIASIS.)

Lymphangioma, Cystic.—Cystic lymphangiomata of varying magnitude occur in all parts of the body and sometimes form enormous tumors. The most frequent form is the **hygroma cysticum colli congenitum**, which consists of unilocular or multilocular cystic tumors of lymphatic tissue, and occurs chiefly underneath the lower jaw or above the clavicle and, depending on its shape, extends either outward or downward between the muscles of the neck along the sheath of the vessels (Fig. 87).

A *cure* can be effected only by extirpation, which requires the services of a surgeon.

Macroglossia. See CRETINISM.

Malaria.—It is now universally conceded that *infection* takes place through ameboid parasites, which can be demonstrated in the red blood-corpuscles of an individual suffering from malaria. Direct transmission of these parasites to healthy individuals takes place through the bite of a mosquito (anopheles) which has been infected with the parasite-containing blood of a malarial patient. After the malarial plasmodia have entered the blood they make their way into the red blood-corpuscles, where they cause various changes which determine the individual types of the disease.

In doubtful cases a microscopic examination of the blood and the finding of the plasmodium establish the *diagnosis*.

Malaria is not rare among children, but the disease exhibits a number of differences in its onset and subsequent course as compared with the same disease in adults.

As a rule intermittent fever begins with a daily attack, which does not, however, always occur at the same hour. Nor is the attack always ushered in by chill; instead there may be nervous phenomena, such as pallor of the skin, coldness of the peripheral portions of the body, and occasionally vomiting.

After this stage has passed, the temperature often rises to an unusual height, the face at the same time becoming greatly swollen. After a certain interval, which is usually brief, moderate sweating takes place and the fever begins to fall. After the febrile stage the patient sinks into a deep sleep and awakes feeling apparently quite well. Depending on the type of the infection, the attack is repeated either on the next or on the third day.

The splenic enlargement, which can be demonstrated at the very beginning of the attack, increases more and more if the disease is prolonged, and in protracted cases the spleen, as well as the liver, may become enormously enlarged. Owing to the destruction of red blood-cells by the plasmodia, and the toxic substances which they elaborate, cachexia develops comparatively early in children and manifests itself by pallor of the skin, extreme emaciation, digestive disturbances, edema of the face, and, in severe cases, dropsical swellings elsewhere.

In addition to these attacks of intermittent fever, attacks of so-called **larval malaria** occur, in which the temperature is often barely elevated above the normal. These attacks are typically intermittent, and consist of periodical vomiting and diarrhea, associated with urticarial eruptions or neuralgic pains, or sometimes with some disease of the respiratory organs.

In general the *prevention* of malaria calls for drainage and sanitary reconstruction of malarial regions and the destruction of the anopheles mosquito. Individual protection is secured by means of mosquito netting.

Treatment.—With the sole exception of quinin we have practically no absolutely reliable remedy against malaria. The drug must be given in suitable doses (as many decigrams (1½ gr.) as there are years in the child's age) three hours before the expected time of the attack. If there are insuperable obstacles to the use of the drug, euchinin, aristochin, salochinin, in the same dose, or quinin tannate in twice as large a dose, may be given instead. The administration of

quinin in the form of quinin chocolate tablets is also to be recommended.

If the remedy cannot be given in any of these forms, resort must be had to an enema of quinine hydrochlorate in twice as large a dose as is given by the mouth.

Whatever preparation is selected, the administration must be continued until the child has been free from attacks for weeks and the swelling of the spleen has subsided.

In **malarial cachexia** arsenical preparations are indicated in addition to repeated small doses of quinin. Fowler's solution should be given, beginning with 2 drops a day, and increasing the dose gradually every other day up to 10 to 20 drops, or the drug may be prescribed in a mixture, as follows: Fowler's solution, 10–30 drops in water 150 c.c. (4½ fl. oz.), one dessertspoonful to a tablespoonful three times a day.

Later on, or at once, if the cachexia is mild, a drinking-cure with waters containing iron from Levico, Roncegno, or Guberquelle, or a bathing-cure in the same places, is often followed by brilliant results, but the child should not be brought back afterward to the infected region.

Malarial Fever. See MALARIA.

Malt Soup. See GASTRO-INTESTINAL DISEASES OF INFANTS and FEEDING, ARTIFICIAL.

Mammary Glands, Neuralgia of. See MASTODYNIA.

Marasmus. See ATROPHY, etc.

Marrow, Spinal, Inflammation of. See MYELITIS.

Mastitis Neonatorum.—The mammary glands of newborn infants often continue for some time to secrete a fluid which in its chemical composition resembles colostrum; the glandular tissue, as a rule, is swollen. Under the influence of some injury, and especially if the gland is unwisely squeezed by the nurse, secondary infection takes place, and the gland-

ular tissue may undergo inflammation and suppuration. The glands are hard and infiltrated, exhibit great tension, and the skin covering them is white and glistening and later becomes red and inflamed. Temperature increases, the general health is disturbed, and fluctuation makes its appearance either in the entire gland or in certain portions of it.

Abscesses formed in this way may rupture spontaneously, and in severe cases lead to partial necrosis of the overlying skin, erysipelas or phlegmonic processes of the thorax, or even to septic infection.

If beginning infiltration of the mammary gland is recognized in time and suitable treatment is employed, the *prognosis* of the condition is always favorable. If, however, suppuration of the glandular tissue takes place, the prognosis, in view of the complications that may follow, is sometimes unfavorable.

Treatment.—If the gland is merely swollen, pressure of every kind must be avoided, and all that is necessary is to cover the breast with cotton or apply compresses wrung out of aluminum acetate, 1 : 4 of water, or Goulard's solution, several times a day. As soon as the inflammation betrays itself by redness of the skin, suppuration must be encouraged by applying warm poultices, and if fluctuation can be demonstrated beyond a doubt, the abscess must be incised in a direction running radially to the nipple.

With regard to the *prophylaxis*, inflammation of the breasts can be avoided by guarding against the above-mentioned injuries.

Mastodynia (*Irritable Breast; Neuralgia of the Mammary Glands*).—During the period immediately preceding the development of puberty, and sometimes after its development and immediately before the appearance of the menses, girls sometimes suffer from pain in one or both mammary glands, which may be accompanied by intercostal neuralgia and is *described* as dragging or tearing pains of variable duration or as a dull, sore feeling. When the breast is examined, one or more hard nodes may be found in the glandular tissue

around the nipple, which is painful on pressure or even sensitive to the slightest touch.

On account of the tenderness to pressure, all tight-fitting clothes or corsets must be avoided. The pain may be controlled with inunctions of menthol-chloroform, 1 : 10, or 1 part menthol to 50 parts of camphorated soap liniment, or even opium or morphin ointments, 0.20 to 20 gm. (3 gr. to 5 dr.); or merely a Priessnitz compress. When the breast is acutely sensitive it must be protected by means of a cotton dressing.

Local treatment, however, does not suffice; for the anemia, hysteria, and dysmenorrhea, which are usually present, bear a causal relation to the disease and require appropriate treatment.

Masturbation (*Onanism*).—Signs of sexual irritability are often observed in children during the first months of life. Unprincipled nurses or other servants are sometimes responsible, or the bad habit may be developed in nervous and irritable children by carrying them awkwardly, or by some other causes. The latter include any morbid change in the genitals capable of causing itching, especially catarrhal vulvovaginitis, eczema of the foreskin, phimosis, balanitis, or the entrance of seat-worms into the vagina or the prepuce, and, finally, the reflex irritation from a fissure in ano. In older children seduction and imitation undoubtedly play an important part, especially in schools and institutions.

Masturbation may be carried out in a variety of ways, depending, in many cases, on the child's age, the strictness with which it is kept under supervision, and other accidental factors. Whether the child indulges in hopping or rocking movements when seated, or rubs the legs together, or resorts to manual intervention, the movements, whether consciously or unconsciously performed, are always kept up until an orgasm takes place. The child's face becomes red and covered with perspiration and then suddenly assumes an entirely different, often an ecstatic, expression. Sometimes the orgasm is followed by twitching of the muscles of the face or of the entire body, which gives place to general lassi-

tude and desire to sleep, or to a heightened general excitability.

As a rule the consequences of onanism are painted in unnecessarily vivid colors, a practice which is justifiable only in those cases in which marked disturbance of the general health or psychic condition takes place as a result of the bad habit.

In many children arrest or even loss of the mental faculties, lassitude, or irritability, with an expression of countenance corresponding to these *symptoms*, are observed. The eyes are dull and, as the child is weighed down by its sense of guilt, its sense of shame is exaggerated in proportion to its age, or it becomes exceedingly shy; totally degenerated children exhibit marked frivolity.

Certain local effects are also observed: In girls, catarrh of the vagina, scratch-marks, elongation of the labia or the folds of the clitoris; in boys, abnormal looseness of the foreskin or even acquired paraphimosis, the member showing unusual development and an exaggerated tendency to erection.

FIG. 88.—Apparatus for preventing masturbation in girls.

Treatment.—If any definite cause is discovered it must be removed. As soon, however, as there is more than a presumption of onanism and the child has been convicted of the practice, it must be prevented by increased vigilance, keeping the child more under observation and preventing it from touching the genitalia or rubbing the legs together.

To prevent the child from handling the parts, the hands are bandaged with splints projecting beyond the finger-tips, or the arms may be fastened to the sides of the bed. Certain specially constructed occlusive apparatus may also be employed; they are put on either at night only or also during the day and absolutely prevent the child from touching the genitalia. Suitable apparatus to prevent the approximation

of the legs have been constructed, and are to be worn at night (Fig. 88).

In addition to the use of these contrivances a radical change must be made in the child's mode of life, both from a physical and from a mental standpoint. The child must not be allowed to sit too long at a time, but should be made to take exercise until fatigue is induced, and should be prevented as much as possible from indulging in the reading of salacious literature and associating with older children whose moral integrity is not above suspicion. Cool baths, douche baths to the lumbar region, and a hard bed with little covering are great aids in the treatment.

Punitive measures, which are sometimes recommended, very frequently produce a negative result because they render the child more secretive and estrange its love and confidence.

Measles, German. See RÖTHELN.

Measles (*Morbilli*).—One of the most frequent infectious diseases; occurring usually in epidemics, in which very few unprotected children escape. A first attack of measles does not confer immunity for all time, as a second infection may take place after many years. The *cause* of measles is unknown, but there appears to be no doubt that the infection is caused by the inhalation of air containing the secretion of the prodromal coryza in suspension. Indirect transmission is conceivable only through the catarrhal secretion of measles coming in contact with persons or objects.

The stage of *incubation* lasts up to two weeks, during which time the patient *exhibits* ill humor without any discoverable cause, anorexia, and, usually, an evening rise of temperature. With the beginning of the *prodromal stage* these symptoms become more marked and other phenomena make their appearance which represent the real prodromal symptoms. They consist chiefly in catarrh of the conjunctiva with redness, lacrimation and photophobia, coryza with violent attacks of sneezing, occasional hemorrhages from the nose, and catarrh of the respiratory organs manifesting itself

by an obstinate and sometimes rather hoarse cough; occasionally diarrheal stools are observed. During this stage the oral mucous membrane, especially on the soft and hard palate, is uniformly inflamed and covered with a bright-red enanthema consisting of dentated macules; very often this is preceded by the appearance on the buccal mucous membrane, opposite the molars, of minute bluish-white dots or patches varying in size from that of a pin-prick to that of a pin-head upon a reddish base. These spots, which have been called after Koplik, persist until the cutaneous rash appears, and then gradually fade.

After these prodromal phenomena have been present for three or four days the rash makes its appearance, often attended with intense fever. Beginning in the face and behind the ears the eruption extends downward, and within a few days the entire body is covered. The eruption is macular and papular in character and more or less intensely red; petechiæ are present in the skin. Although the lesions often become confluent in places, some strips and isolated areas of normal skin still remain visible. The concomitant symptoms and the fever progress *pari passu* with the extension and efflorescence of the rash.

After this stage has lasted a few days the fever begins to subside and the rash fades out in the order of its appearance; this is followed by branny desquamation of the skin, which, however, often retains a brownish pigmentation for some weeks.

The concomitant phenomena, as a rule, disappear more gradually than the rash; the catarrh of the respiratory organs may persist for some time, even after the temperature has gone down.

Aside from the modifications as regards temperature, appearance of the rash and other concomitant phenomena, the above is a picture of the normal course of measles. The complications of the disease are numerous and depend in part on the character of the prevailing epidemic and in part on the age and constitution of the affected individual.

Among the most frequent *complications* of measles are the

various forms of OTITIS (*vide*), which are favored by the nasal catarrh and by adenoid vegetations. We should mention also protracted diseases of the conjunctiva and even of the cornea and the very frequent affections of the air-passages.

Most complications of measles have as a common feature an unusual prolongation of the stage of defervescence: hence, if the temperature is slow to come down, one should always suspect the development or existence of a complication. The catarrh or other disease of the air-passages which is present during the prodromal stage, or even prior to infection, very frequently continues to spread; the temperature rises, the respirations become more frequent, and severe bronchitis with catarrhal pneumonia develops. The danger of measles is particularly great in the presence of latent tuberculosis of the lungs, which may be converted into a most virulent disease under the influence of this infection.

Another very dangerous complication of measles is so-called measles-croup, which may be caused by diplococci or streptococci or due to a mixed infection from the presence of diphtheria bacilli. Whooping-cough should also be mentioned in this connection, as it sometimes follows measles. Other complications are persistent catarrhal disease of the intestine and the kidney, and, finally, gangrenous processes of the skin (noma) and purpura (bloody stools, epistaxis, etc.), which usually prove fatal; but the mere presence of a small cutaneous hemorrhage with the rash is not in itself enough to justify an unfavorable prognosis.

As has already been mentioned, the *prognosis* of the disease depends on the character of the epidemic and on the child's age and previous condition. Although in many cases, even in the presence of rachitis and scrofulosis and in individuals who may be suspected of tuberculosis, the prognosis is not at first unfavorable, yet there is always a possibility of severe complications developing even after a considerable interval, so that the prognosis in these cases is often extremely gloomy.

Treatment.—A child that is attacked by measles must be kept in bed even during the stage of incubation and placed

on a light diet, which must be adapted to the appetite. If the temperature is excessively high during the prodromal stage and the stage of efflorescence, it must be controlled with cool packs.

The temperature of the room should not exceed 16° R. (68° F.), and as photophobia develops the windows should be darkened or the patient so placed that the light does not fall directly on the bed. For the rest, the air of the sick-room must be renewed at short intervals, and precautions taken to prevent dust and to increase the moisture of the air. This is accomplished by having the floors wiped with a damp cloth once or twice a day and hanging up large bed-sheets saturated with water, or by vaporizing water with a spray apparatus.

The various concomitant symptoms of measles require suitable treatment. If the conjunctival catarrh is severe, the eyes must be washed several times a day with a 2 per cent. boric acid solution or a pale-red solution of potassium permanganate; in the presence of severe rhinitis the nasal passages should be anointed several times a day with a 5 to 10 per cent. borated vaseline or 2 per cent. yellow mercurial ointment. Epistaxis, if marked, may be controlled with a tampon of iron chlorid cotton well wrapped with absorbent gauze, or by injecting a few drops of a 1 : 10,000 solution of adrenalin chlorid. Aural complications may in many cases be prevented by introducing a cotton tampon saturated with a 0.2 per cent. solution of silver nitrate into the nasal passages and expressing the solution from the cotton. When otitis media has developed it must receive suitable treatment (see OTITIS).

The cough is often very distressing and must be controlled by means of narcotics, in doses adapted to the child's age; but in some cases all remedies fail, and it is found impossible to mitigate the cough. So long as the cough is of the dry, barking variety, characteristic of laryngitis, hot throat compresses, hot drinks and inhalations should be employed, as in the treatment of laryngitis. If there is any suspicion of diphtheria, a serum injection should be administered without delay, and if there is any danger of exposure to this

infection, as, for example, in children's hospitals, an immunizing injection should always be given.

Any complication occurring during the course of measles or convalescence from the disease calls for the appropriate treatment, which is discussed under the respective headings.

In a normal case of measles, as soon as the cough has entirely disappeared and the child has been without fever for several days, it should be given a warm bath, which is to be repeated after a few days. As soon as the weather permits, the child may be allowed to go out. If convalescence is protracted, the child should remain under medical supervision. Caution should be enjoined against allowing him to remain out-of-doors too long, and in suitable cases he may be sent to a health resort, which must be selected with care and must be suitable for the time of the year.

Prophylaxis.—In order to prevent infection being carried from one individual to another with any degree of success, the initial symptoms which have been mentioned must be correctly recognized, and healthy children isolated as soon as possible. It has already been mentioned that weakly children, and all children under three years of age, must be protected against the infection of measles by every precaution at our command.

Meckel's Diverticulum. See UMBILICUS, DISEASES OF.

Melæna Neonatorum.—This disease of the newborn is *characterized* by the discharge of more or less altered blood, either from the stomach or more frequently from the bowel, and occurs either immediately or a few days after birth. In many cases the *cause* is not known; sometimes the bleeding comes from ulcers of the stomach or intestines, or occurs secondarily in hemophilia, sepsis, or hereditary syphilis. If the hemorrhages are frequent and large in amount there is often rapid loss of strength; the temperature goes down to the minimum, and death takes place with symptoms of acute cerebral anemia. The characteristic appearance of the vomited masses and of the stools, and the symptoms of severe

anemia which follow, establish the *diagnosis* of this most alarming disease, which is a grave menace to the infant's life.

This condition, which is known as **melæna vera**, must, however, be distinguished from **melæna spuria**, in which the blood comes from the nose or the oral cavity of the child, or has been sucked from a fissured nipple or a ruptured abscess in the nurse's breast. The fact that the amount of blood which is either vomited or passed with the stool is small, its color, and sometimes the child's age, and the absence of alarming symptoms of anemia and consecutive collapse usually suffice to guard against a mistake in diagnosis. Nevertheless, a fatal epistaxis presenting a picture in every way like that of melæna has also been observed, as the supine position of the child favors the backward flow of blood into the pharynx, whence it may be swallowed without giving any external sign of its true origin. Inspection of the pharynx should therefore never be neglected.

The *treatment* of melæna vera consists in the administration of styptics. Solution of iron sesquichlorate or extract of ergot, 1 to 2 drops in a teaspoonful of sterilized ice-water every hour, is prescribed. Quite recently remarkable results have been achieved by means of subcutaneous injection of a 2 per cent. solution of gelatin, and this treatment should therefore be tried in addition to the above-mentioned internal remedies. The gelatin solution to be used must be sterilized with the strictest observation of every precaution and is prepared as follows:

℞ Gelatin alb. (Merck),	2.0	(gr. xxx);
Sodii chlorid.,	0.12	(gr. ij);
Aqua. destill.,	100.0	(f℥iij).—M.

Of this solution, heated to 38° C. (100.4° F.), 10 c.c. every one or two hours, or 20 to 25 c.c. twice a day, are injected into the thighs with a serum syringe. In addition to the subcutaneous injections, the gelatin solution may also be given in spoonful doses, ice-cold, by the mouth, and an enema of 50 c.c. (1½ oz.) may be administered several times a day.

In addition to these measures every precaution must be taken to guard against a reduction of temperature by packing the infant in cotton or, if necessary, placing it in an incubator; the *diet* must also be suitably looked after. The same precautions must be employed that have been discussed under the heading Premature Infants. (See DEBILITAS VITÆ.)

Membranous Enteritis. See GASTRO-INTESTINAL DISEASES OF INFANTS.

Meningeal Hemorrhage. See HEMORRHAGE, MENINGEAL.

Meninges, Inflammation of. See MENINGITIS.

Meninges, Spinal, Hemorrhage into. See HEMORRHAGE INTO THE SPINAL MENINGES.

Meninges, Spinal, Inflammation of.—This disease either follows inflammatory disease of the dura mater or pia, or may be due to injury or caries of the vertebræ or ribs, empyema, or phlegmonous inflammation of the throat. In spinal as in cerebral lepto- or pachy-meningitis, a fibrinous or purulent exudate is formed, and the cerebrospinal fluid is always found secondarily to be increased or turbid.

When the spinal disease is not associated with similar disease of the cerebral meninges, *symptoms* corresponding to the location and extent of the pathologic process make their appearance and point to the seat of the disease. These consist in pain along the vertebral column, increased by active and passive movement and by contact, and causing spasm of the muscles of the nape of the neck and of the back (opisthotonos). In addition there are often high fever, hyperesthesia of the skin, and sometimes, when the reflexes are exaggerated and Kernig's symptom is present, pain with strangury. As the exudate increases, retention of urine and feces, and anesthesia, paresis, and paralysis of the extremities, may be superadded.

The *prognosis* of this acute disease is unfavorable in the majority of cases.

The *treatment* consists in placing the patient in a comfortable position, in the application of cold to the vertebral column, the administration of mild laxatives and suitable feeding. If there is much restlessness, hot baths or, if necessary, even opiates must be employed. Lumbar puncture may also be performed if only for diagnostic purposes.

Meningismus. See MENINGITIS, SEROUS.

Meningitis, Basilar. See MENINGITIS, TUBERCULOUS.

Meningitis, Epidemic Cerebrospinal.—The *etiology* and mode of spread indicate that cerebrospinal meningitis belongs to the infectious diseases. It occurs both in epidemics and sporadically.

The exciting organisms are the diplococcus intracellularis (Weichselbaum) and diplococcus lanceolatus pneumoniæ. The first seems to predominate in the epidemic, and the last in the sporadic form of the disease. The portals of infection probably are the nose and the pharynx. [Cases due to the diplococcus lanceolatus are with doubtful propriety classed as epidemic cerebrospinal meningitis—ED.]

The *pathologic changes* produced by these micro-organisms consist in a purulent, saponaceous exudate on the meninges, which may extend as far as the lumbar enlargement of the spinal cord. Secondarily, the ventricles of the brain and the central canal of the spinal cord become filled with a turbid, seropurulent, or exclusively purulent exudate. The *course* of cerebrospinal meningitis is variable and depends on the nature and virulence of the cause and, occasionally, on the character of the epidemic. Disregarding the causal factors, the disease may in general be subdivided, according to the degree of severity, into four varieties: the fulminating, acute, subacute, and abortive.

Opisthotonos with rigidity of the muscles of the neck, headache, and pain in the vertebral column are characteristic

of all forms of the disease; but variations occur during its course which seem to justify the above-mentioned classification. The **fulminating** variety has no prodromal stage, and begins abruptly with high fever, vomiting, immediate unconsciousness, convulsions, and a high grade of opisthotonos, and *terminates* fatally within a few hours or days with profound coma and general convulsions. The **acute** form runs a somewhat more protracted and less violent course, although it is similar to the foregoing in its individual symptoms; these cases sometimes end in recovery after repeated and successively milder attacks of the disease. The **subacute** and **abortive** forms are much more mild in their onset, both as regards the height of the fever and the other clinical phenomena, so that in most of these cases a favorable course without sequelæ can be predicted.

Depending on the severity of the disease and the extent of the inflammation and its products, chronic and tonic convulsions of the upper and lower extremities with well-marked Kernig's symptom (*vide*) make their appearance in addition to the rigidity of the neck and pain in the back. To these phenomena are superadded hyperesthesia, extensive macular erythema of the skin, and, occasionally, a herpetic eruption, especially on the lips. The cerebral and cerebrospinal symptoms may gradually subside, depending on whether the onset is mild or violent; or a variety of disturbances, such as chronic hydrocephalus, idiocy, aphasia, deafness, blindness, a partial paralysis of the extremities, and sometimes metastatic inflammation of joints, remain as sequelæ.

In order to establish the *diagnosis*, and also for therapeutic purposes, lumbar puncture (*vide*) should be performed in suitable cases. Bacteriologic examination of the specimen obtained establishes the nature of the disease beyond a doubt.

Lumbar puncture, which under certain circumstances has to be performed repeatedly, often has a remarkably good effect on the course of the disease by moderating the pressure symptoms, particularly in the less severe cases.

For the rest, the same *treatment* as that laid down for purulent meningitis must be adopted (see MENINGITIS, SUP-

PURATIVE). Aside from rest and the avoidance of every kind of irritation, cold to the head and to the spinal column (Chapman's tube) is employed. Inunction of the skin along the spinal column with 1 gm. (15 gr.) of Credé's ointment or mercurial ointment, once or twice a day, may be ordered, with a caution to avoid the vertebral column itself, as it is exceedingly painful to touch; the same principle underlies the practice of administering injections of bichlorid of mercury into the buttocks, 0.005 to 0.01 gm. ($\frac{1}{13}$—$\frac{1}{7}$ gr.) per day, at first once a day, and later, after improvement has begun, every other day. Hot baths have recently been credited with good results. They are to be administered once a day or even every three or four hours, the temperature being raised in from ten to twenty minutes from 27° R. (92.7° F.) to 37° R. (115.2° F.), while a cold compress is kept constantly applied to the head; after this the patient is packed in blankets and made to sweat for an hour. In administering these baths the patient must be lifted in and out of the bath as carefully as possible and without touching the head. Sometimes sedatives are required to combat the violent pain or to control the convulsions; in case of weakness stimulants are ordered, and even in the severest cases an attempt must be made to maintain the strength as long as possible by administering food in a fluid or semifluid form or as nutritive enemata.

During the stage of convalescence potassium iodid or iodalbacid 1 gm. (15 gr.) per day is prescribed internally, and the patient is kept quiet and prevented from making any physical exertion. If palsies remain, they must be treated with faradism and massage.

Meningitis, Serous (*Meningismus*).—This disease *occurs* chiefly in the early years of childhood and consists pathologically in hyperemia with consecutive edema of the meninges or a more or less copious acute exudation into the ventricles of the brain. The disease sometimes occurs without any assignable cause, but, as a rule, it follows other diseases, particularly influenza, typhoid fever, pneumonia, articular rheumatism, and otitis media; it also occurs after

intestinal diseases and as part of the morbid process in insolation.

In the last-mentioned conditions the *symptoms* make their appearance suddenly, sometimes accompanied by great elevation of temperature, and this form of the disease is designated acute hydrocephaloid. As a rule the onset of the disease is insidious or associated with but slight rise in temperature. The pulse is slow and intermittent and presents the so-called cephalic character; often it is irregular. Older children complain of headache; the face is usually hyperemic; the sensory sphere at first is but little disturbed. Either at once or gradually the cephalic symptoms become more and more prominent; vomiting, rigidity of the neck, disturbance of consciousness, sluggish reaction of the pupils, and partial or general convulsions with hyperesthesia of the skin dominate the *clinical picture*. These head symptoms, which are sometimes quite severe, may disappear entirely after a duration of weeks; or the optic neuritis which accompanies the disease may cause blindness from atrophy of the optic nerve, associated sometimes with marked disturbances of the intelligence. Depending on the *cause*, the disease may run on to a rapidly fatal termination like purulent meningitis, or the course may be chronic and even perfect recovery may take place in some cases.

The *treatment* consists chiefly in rest, the avoidance of noise, and the application of cold to the head. With the exception of those cases which begin with violent diarrhea, an attempt must be made to influence the disease by acting on the bowels. Either calomel or some other laxative is used for this purpose, and, in addition, quinin, pyramidon, and antipyrin are given for their action on the blood-vessel nerves. It is in serous meningitis that a lumbar puncture (*vide*) is of most value in a therapeutic sense, and in doubtful cases the procedure should never be omitted. It relieves the pressure in the ventricles and in many cases mitigates the head symptoms, while not infrequently it contributes toward effecting a cure.

It is hardly necessary to mention explicitly that the fluid

obtained is to be received in a sterile vessel and examined bacteriologically, as the *diagnosis* cannot be established beyond the possibility of a doubt without such an examination.

Meningitis, Suppurative.—The exciting *causes* of this not very frequent disease are of various kinds. It may be due to traumatism, to extension by way of the lymph or blood-channels in suppurative disease of the middle ear, or of the frontal or nasal cavity; it may occur in pneumonia, erysipelas, and septic conditions, and as the result of various infectious diseases.

A number of pathogenic micro-organisms have been found in this form of meningitis. The most common is the diplococcus pneumoniæ; next in frequency are the staphylococcus and streptococcus, and under certain conditions influenza or typhoid bacilli may also produce the disease. Under the action of these organisms serous, fibrinous, and fibrino-purulent exudates are formed in the subarachnoidal space, preferably on the convexity of the brain, and sometimes also on the spinal meninges.

Purulent meningitis is characterized by an acute onset and, as may be at once emphasized, usually a fatal termination. The temperature rises rapidly, often to a considerable height; there is severe headache, and frequent so-called cephalic (cerebellar) vomiting takes place. These *symptoms* are followed by convulsions, which may be continuous or interrupted by short intervals of freedom, and may involve either the entire body or only certain parts. During the intervals of freedom the skin is extremely hyperesthetic, there is great photophobia and dread of noise, the patient is profoundly prostrated, and Kernig's symptom is almost always distinctly present. The pulse and respiration increase in frequency; the child emits a loud piercing cry and grinds its teeth; the pupils contract; sometimes there is rigidity of the neck, and deep coma soon develops. These symptoms persist and death occurs usually after a duration of one week. In those extremely rare cases in which the acute symptoms are arrested and recovery from the morbid process takes

place, profound disturbances of the intelligence, blindness, and deafness with or without partial paralysis or contractures of individual muscles remain.

The *treatment* is practically always hopeless. The fever must be combated by the application of ice compresses, Leiter's coils, or an ice-bag to the head, and inunction of the head and neck with blue ointment; a calomel purge for its decongestive effect, and the application of a mustard-plaster to the back and to the calves of the legs to promote diaphoresis through the skin are usually employed. Severe headache and convulsions require narcotics in the form of chloral enemata or morphin 0.0025 to 0.005 gm. ($\frac{1}{25}$—$\frac{1}{13}$ gr.).

When purulent meningitis is due to disease of the frontal sinus, Highmore's antrum, or the tympanic cavity, the case must be treated surgically, and timely intervention by the surgeon may sometimes bring about recovery from this grave disease.

The question of lumbar puncture should be considered in purulent meningitis because, although it has no curative effect, the *diagnosis* and *prognosis* can be positively established by an examination of the fluid obtained. When the disease runs a chronic course, which, as has been stated, is extremely rare, every effort must be made to maintain the strength by a suitable, light diet and by avoiding any form of mental or physical excitement, so as to guard as much as possible against any disturbance of the subsequent course of the disease.

Meningitis, Tuberculous (*Basilar Meningitis*).—This almost invariably fatal disease frequently represents in childhood the tragic end of some other tuberculous affection.

The essential feature of the disease is the presence of tubercle bacilli with the formation of miliary tubercles in the arachnoid spaces. The primary tuberculous focus may be situated in any portion of the body; in children tuberculous meningitis usually takes its origin from tuberculous and cheesy bronchial or pulmonary glands.

Pathologically, the important criteria of tuberculous men-

ingitis, aside from miliary nodules, are dilatation of the ventricles, which is often enormous and is due to the presence of an albuminous exudate, with consecutive softening and destruction of the ependyma of the ventricles and of the adjoining brain spaces; and the formation of a greenish-yellow gelatinous exudate at the base of the brain, which follows the artery of the fossa of Sylvius and is continued into the meshes of the pia mater. The miliary nodules are found disseminated throughout this exudate and occupying its most minute divisions, or sometimes collected in larger groups.

Great as is the difference between the pathologic findings in tuberculous meningitis and those seen in the purulent form of the disease, the differences between the two conditions are seen even more strikingly in the clinical course.

As a rule the disease is protracted and is preceded by prodromal symptoms, which, if carefully noted and correctly interpreted, enable the observer to make an early prediction of the approach of this baneful disease.

Commonly, a marked change is observed in the child. Speech and intelligence are often affected, the child emaciates, occasionally complains of headache, becomes pale, irritable, sleeps either too little or too much, and the sleep is restless and frequently interrupted; the child cries out, grinds its teeth, or awakes suddenly with a start. In those cases in which tuberculosis may be assumed, or can be clinically demonstrated, the clinical course as described under PULMONARY TUBERCULOSIS, especially the evening rise of temperature, is observed.

After lasting for weeks in some cases, the prodromal symptoms gradually become more and more marked. Older children complain of violent headache; small children automatically carry their hands to their heads and complain of vertigo. The *symptoms* of photophobia, abnormal sensitiveness to noise, and sudden flame-like flushing affecting the whole or part of the face, become more marked. The appetite diminishes or is lost altogether, the bowels are usually constipated, and the abdomen gradually begins to sink. In

addition to these symptoms, which in themselves must be regarded as ominous, projectile vomiting, occurring suddenly and independently of the taking of food and without any previous nausea, soon sets in and may be repeated a number of times or, in rare cases, occurs only once. Now the cerebral symptoms begin to assert themselves, and from this time on dominate the clinical picture.

To give a general view of the clinical symptoms which follow we may divide them into sensory, motor, and vasomotor. The sensory symptoms, as has been mentioned, consist in headache, which is often very intense, increased hyperesthesia of the eyes with contraction of the pupils, and hyperesthesia of the hearing and of the skin. Motor irrita-

FIG. 89.—Cerebrospinal meningitis: Tâche cérébrale shown on left thigh (Ruhräh).

tive phenomena manifest themselves in brief contractions of individual muscles, masticating movements, and grinding of the teeth.

Vasomotor disturbances consist in the already mentioned macular erythema of the skin, and gradual appearance and disappearance of a red line wherever the finger is drawn across the skin (*tâches cérébrales*, Fig. 89).

These symptoms of cerebral irritation are quickly or gradually replaced by others, which are due to the associated phenomenon of pressure on the brain. The child lies in a stupor, with eyes half closed and head often retracted, and cries out at intervals—the so-called *cri hydrocéphalique*—or starts in affright and rouses itself momentarily from its comatose condition, but soon relapses into sleep. The behavior of the pulse

and respiration is of great significance in this stage. Both are slow and irregular, and the irregularity of the pulse is a most important factor in the *diagnosis*. The tendon reflexes are exaggerated and remain so for some time; Kernig's symptom (*vide*), paralytic phenomena, especially in the ocular and facial muscles, such as pupillary dilatation, ptosis, strabismus, and facial paralysis, and finally Babinsky's sign, make their appearance. Babinsky's sign consists in reflex extension of the large toe instead of flexion when the sole of the foot is tickled. Gradually, increased rigidity or flaccid paralysis of the muscles of the extremities is observed. Passive congestion, due to the increased accumulation of fluid, shows itself in the skin of the forehead, where the tortuous veins become more and more visible. If the fontanel is still open the tissues bulge and the tension is increased.

Owing to spasm of the muscles of the intestinal wall the feces are often retained for days, and hard scybala can be felt through the attenuated and depressed abdominal walls (scaphoid abdomen).

The desire for food disappears more and more as the loss of consciousness increases, and gradually the child even loses the power of swallowing liquids.

This stuporous condition often lasts several weeks, and may be interrupted occasionally by a short period of improvement. Soon, however, the symptoms reappear with renewed violence. This is followed by the brief stage of cerebral palsy, which finds its expression in acceleration of the pulse, the occurrence of Cheyne-Stokes breathing, and general convulsions. The pupils are dilated, the cornea and conjunctiva inflamed from the lagophthalmus and diminished reflex closure of the lids; the cornea becomes dry and sometimes ulcerates. The color of the face may be purple, red, or cyanotic; the tongue and lips are dry; and the greatly emaciated body is covered with perspiration.

Such are the terminal symptoms of this disease, the gravity of which is recognized at the very beginning. In addition to the convulsions already mentioned, palsies occur on one or both sides of the body, and the temperature, which is fre-

quently normal during the course of the disease, either becomes excessively high or subnormal during the period immediately before dissolution.

It should also be mentioned that in the very beginning, and still more frequently during the later course of the disease, an ophthalmoscopic examination may reveal changes in the retina, such as hyperemia, papillitis, or even tubercles on the choroid. In addition to the ophthalmoscopic examination, we have in lumbar puncture (*vide*) a diagnostic aid which in many cases, by means of the bacteriologic findings, removes all doubt about the nature of the disease.

The *course* of tuberculous meningitis is usually very prolonged and may last from two to three or four weeks. Very much protracted and typic cases often represent the final stage of solitary tubercle of the brain of some standing, which occasionally can be recognized during life by the existence of choked disk. The *prognosis* is almost without exception fatal. The *cause* of the disease resides in some tuberculous focus which is often latent, but can always be found at the autopsy. Sometimes the disease is brought on by a fall or a blow on the head; but in most cases the latent, slumbering tuberculous process is lighted up during convalescence from some infectious disease, especially measles, whooping-cough, or even severe chicken-pox.

While there is practically little to be said about the *treatment* of meningitis, the prophylaxis is not without importance, especially in cases in which an inherited predisposition or the existence of tuberculous disease has actually been demonstrated in one of the parents. The child, at least during the early months of life, should be fed on breast-milk, and later all the conditions of its life, and particularly the diet, must be kept under the most careful supervision.

It is needless to say that direct transmission of tuberculosis must be prevented by keeping the child away from adults suffering from this form of disease of the lungs. From what has been said above it follows that children of this class must be protected as much and as long as possible against any other kind of infection and against mental overexertion; and that

their resistance must be increased by procedures to harden the body, by sending them to the country, and by giving them brine baths and nourishing food containing plenty of albumin and fat. This mode of life should be supplemented by the administration of suitable therapeutic remedies such as cod-liver oil and iodin and iron preparations while the disease is still in the scrofulous stage—*i. e.*, before a distinctly tuberculous disease has declared itself; and later, iron and creosote preparations. (See TUBERCULOSIS.)

The management of a case of tuberculous meningitis consists in enforcing rest, guarding the child against light and sound, and applying cold to the head. Locally, inunctions with a 10 to 20 per cent. iodoform or guaiacol ointment, mercurial ointment, or Credé ointment, a piece as large as a pea rubbed into the occiput twice a day, are employed. Internally, laxatives, such as calomel, 0.025 to 0.05 gm. ($\frac{3}{8}$–$\frac{3}{4}$ gr.) to the dose, one powder in a teaspoonful of sugar-water every two or three hours; or sodium iodid, 1–2 gm. to 100 c.c. (15–30 gr. to 3 fl. oz.), one teaspoonful to a dessertspoonful every two hours, each administered for a few days. If the irritative phenomena are marked, bromids, opium, morphin, 0.0025 to 0.005 gm. ($\frac{1}{26}$–$\frac{1}{13}$ gr.), and if the convulsions increase and there is great restlessness, chloral hydrate, either internally, 0.25 to 0.50 gm. (4–7½ gr.) every hour until an effect is produced, or in the form of an enema 0.5 to 1 gm. in 50 c.c. of a mucilaginous mixture (7½–15 gr. in 1½ fl. oz.), must be prescribed.

Lumbar puncture, which is also sometimes employed in tuberculous meningitis, occasionally produces, temporarily, a good effect by lessening the somnolence and coma. As long as the child can be fed, the food should consist of fluid or semifluid articles prepared with milk, and soups, to which may be added somatose, sanatogen, tropon, puro, or carnigen to improve the taste.

As soon as the amount of food taken is insufficient, nutritive enemata, consisting of a mixture of milk, soup, yolk of egg, and one to two teaspoonfuls of Dipel's meat-juice with a little salt, must be administered several times a day.

[In many cases, especially with younger children, feeding by the stomach-tube can be successfully carried out; and even if the ultimate prospect is hopeless, this procedure at least gives comfort to the parents, who are often most poignantly distressed by the fact that the child cannot take nourishment. —Ed.]

Meningocele (*Encephalocele; Congenital Hernia of the Brain*).—Owing to some defect in the cranial bones or in the dura mater, a tumor of variable size covered with normal skin

Fig. 90.—Meningocele in the occipital region in a child five weeks of age.

Fig. 91.—Meningocele in the frontal region covered by skin, in a child six weeks of age.

may appear above the root of the nose, over the occiput or, more rarely, on the parietal bones. The tumor may contain only the meninges and cerebrospinal fluid, and is then known as a meningocele, or it may also contain brain tissue, in which case it is known as a meningo-encephalocele, or, finally, the hernia may consist exclusively of brain tissue, and is then called an encephalocele. The seats of predilection, as has been mentioned, are the occiput and the root of the nose (Figs. 90 and 91).

The tumors exhibit the so-called cerebral pulsation, increase

in size and tension when the child cries, and are sometimes partially reducible, the operation being occasionally attended by convulsions. In most cases of reducible hernia the cleft in the bones can be felt.

In the case of small hernias the *prognosis* is sometimes not unfavorable. The condition requires the application of a protective covering consisting of a lead or celluloid capsule. In the case of large meningoceles an attempt may be made to replace the tumor and cover the gap in the bone with a plate made of lead or celluloid; but the result of the procedure, like that of the radical operation, is often unfavorable and, in any case, these measures must be adopted early, because the skin covering the meningocele is very liable to inflammation and gangrene.

Menstruation, Precocious.—Hemorrhages from the vagina are occasionally observed in newborn infants and appear to be *caused* by hyperemia due to traumatism during labor. The hemorrhage is slight and soon disappears.

In rare cases, however, hemorrhages persisting for days appear in very young children; the menorrhagia may cease for a time and reappear again in a typic form, so that these must be regarded as cases of menstrual hemorrhages.

As a rule the general condition is not affected, or slight constitutional disturbance may be present with general malaise and swelling of the breasts. Increased nervous irritability is observed only when the hemorrhage fails to make its appearance for some time.

Children with precocious menstruation usually also exhibit precocious development of the body, especially of the breasts and pubic hair.

The condition requires no *treatment* unless the bleeding is so severe as to produce secondary anemia or otherwise weaken the organism.

In some cases iron preparations are prescribed during the intervals and, while the bleeding lasts, rest in bed, fluidextract of ergot (up to 20 drops a day), fluidextract of Canadian hydrastis, 10 to 15 drops two to three times a day, or stypticin,

0.025 gm. ($\frac{3}{8}$ gr.) in gelatine capsules or in tablets (Merck), are indicated. If the hemorrhage is severe, cold compresses or an ice-bag must be applied.

The same therapeutic measures are indicated in the menorrhagia of older girls. From a pedagogic standpoint, children who mature early require a certain moral supervision.

Microcephalus.—This deformity of the skull is *usually congenital*, but may develop from premature closure of the sutures and fontanels during the first years of life. It interferes with the mental development in various ways and may even cause idiocy.

FIG. 92.—Microcephalus in a child eight years of age.

The later the condition appears the better is the *prognosis*, so far as the mental development is concerned, although some evidences of intellectual deficiency are always observed.

In addition to the strikingly small size of the skull and abnormal development of the face, cases of congenital microcephalus not infrequently exhibit other deformities of various kinds—partial paralyses or contractures, strabismus, nystagmus, and defects in various organs of special sense (see Figs. 92–94).

Migraine. See HEADACHE.

Miliaria (*Prickly Heat*).—An eruption of minute vesicles, at first red and later of a whitish color. Sometimes there is itching, and the scratching may lead to secondary eczema. The condition is *produced* by profuse sweating from excessively warm clothing, or is the result of some other

FIGS. 93 and 94.—Syphilitic child ten weeks of age with microcephalus (depression of the frontal bone):

	At birth (normal).	Depression.
Fronto-occipital	11 cm.	14 cm.
Biparietal	9 "	11 "
Bitemporal	8 "	7½ "

cutaneous irritation—as from brine- or sea-baths or the protracted application of poultices. The occurrence of miliaria should be *guarded against* by exercising care in the selection of the clothing and rinsing the skin with warm water after a salt bath. Putting on thinner clothing and dusting the skin with dusting-powder are soon followed by disappearance of the annoyance.

Milium of the Palate.—Whitish or yellowish nodules the size of the head of a pin are not infrequently observed on the surface of the hard palate in newborn, and especially in premature, infants.

They represent *defects* or *cystic formations* in the mucous membrane which secondarily become filled with epithelial masses.

Occasionally, as the result of forcible cleansing of the mouth, these milia degenerate into ulcers which, like Bednar's aphthæ, may interfere with nursing, and must be treated locally with a 2 per cent. solution of silver nitrate.

Milk, Examination of.—The question whether the milk, be it the mother's milk, that of a wet-nurse, or cows' milk, is

FIG. 95.—Galactometer for testing milk as sold in the market. The examination must be made at a certain temperature, 17.5° [R.?] (71.3° F.). One scale is for unskimmed milk, the other for skimmed milk.

FIG. 96.—Polytubicrémometer with ten small cylinders for testing the milk obtained from ten cows at the same time.

suitable for the baby is determined, first of all, by noting whether the infant thrives and shows the proper weekly increase in body-weight, and by noting the appearance and consistence of the evacuations.

[During the first three months after birth the normal infant gains about 30 gm. daily (about 7 oz. a week); during the next three months this average gain falls to 18 gm. (about 4 oz. a week), the birth-weight being about doubled at the end of the fifth month; during the seventh, eighth, and ninth the gain averages 12 gm. (about 2½ oz. a week); and finally, 8 gm. for the rest of the year (about 2 oz. a week).—ED.]

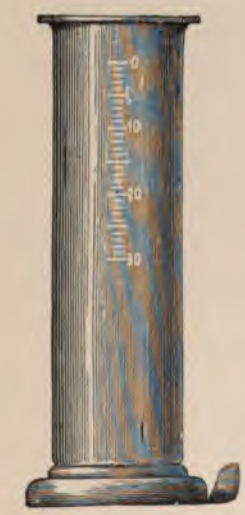


FIG. 97.—Crèmometer: The instrument is filled to the mark 0 with unskimmed milk and allowed to stand for from eighteen to twenty-four hours at a certain temperature, 15° [R ?] (65.7° F), when the depth of the layer of yellow cream can be read off in degrees. The number of degrees corresponds to the cream percentage, which in good milk should never fall below 10 per cent. (after Chevalier).

FIG. 98.—Lactobutyrometer: This is used for the rapid determination of the amount of fat contained in unskimmed, skimmed, milk or buttermilk. The instrument is filled with milk to the mark *M* and ether is added to the mark *Aeth*. The mixture is then shaken, alcohol is added to the mark *Alk*, and, after a second shaking, the instrument is placed in warm water for a certain length of time and then allowed to cool, when the depth of the layer of fat is read off in degrees (after Marchand).

Both human and bovine milks are alkaline or neutral in reaction. By microscopic examination an approximate idea of the age and fat percentage of the specimen can be obtained from the number and size of the fat droplets. Microscopic examination also reveals the presence of foreign admixtures

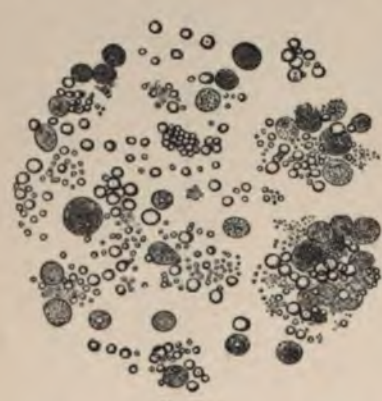


FIG. 99.

FIG. 100.

FIGS. 99 and 100.—Microscopic picture of breast milk containing colostrum (Fig. 99), and of normal breast milk (Fig. 100).

in the milk, which usually point to some morbid process in the mammary gland, or to some external pollution. The presence of colostrum corpuscles can also be discovered with the microscope (Figs. 99 and 100).

PERCENTAGE COMPOSITION OF HUMAN MILK AND BOVINE MILK.

	Albumin.	Fat.	Sugar.	Salts.
	Per cent.	Per cent.	Per cent.	Per cent.
Human milk	1.0–1.7	3.2–4.0	4.8–7.0	0.2
Cows' milk	2.8–3.3	3.0–4.0	3.2–4.8	0.7

The chemical analysis of human milk and cows' milk reveals marked differences in the proportions of the chief constituents. The accompanying diagram (Fig. 101) shows

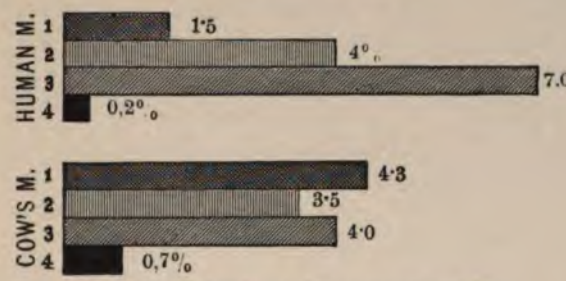


FIG. 101.—1, Albumin; 2, fat; 3, sugar; 4, salts.

the differences in the percentages (see, also, FEEDING, ARTIFICIAL).

The fat percentage in milk is determined by means of a variety of instruments, among which may be mentioned the lactobutyrometer, galoctometer, acidobutyrometer, and the galactoscope. (Figs. 95–98, and 102 from the Catalogue of H. Kapeller, of Vienna.)

FIG. 102.—Gerber's acidobutyrometer.

An approximate idea of the amount of albumin contained in the milk can be gained by determining the specific gravity by means of the aräometer. The specific gravity of human milk varies from 1.025–1.030 to 1.035, and that of cows' milk from 1.029 to 1.035.

Although the individual constituents of animal and human milk are similar, there are, nevertheless, important chemical differences, especially in the albuminous bodies. The albumin of cows' milk under the action of gastric juice forms large clumps, while the casein from human milk, on the contrary, is precipitated in fine floccules.

Aside from these cardinal chemical differences breast-milk is usually found to be free from germs, while animal milk—*i. e.*, cows' milk—may contain a great variety of bacteria and offers a

favorable soil for their development. Animal milk, like human milk, is subject to many changes in its chemical composition; such factors as breed, food (whether dry or green fodder or forced feeding), the state of health, duration of lactation, the occurrence of rut, and the hygienic or unhygienic condition of the stable, are to be reckoned with. These chemical differences between human and cows' milk furnish useful hints in regard to the method to be employed in artificial feeding, and are utilized practically in the section on ARTIFICIAL FEEDING. (See FEEDING, ARTIFICIAL.)

Milk Modification and Percentage Milk Mixtures. See FEEDING, ARTIFICIAL.

Milk, Pasteurization of. See FEEDING, ARTIFICIAL.

Milk, Sterilization of. See FEEDING, ARTIFICIAL.

Milk-crust. See CRUSTA LACTEA.

Moles. See NÆVUS PIGMENTOSUS.

Möller's Disease. See SCURVY, INFANTILE.

Morbilli. See MEASLES.

Morbus Maculosus Werlhofii. See PURPURA.

Mother's Mark. See NÆVUS PIGMENTOSUS.

Mouth and Teeth, Care of the.—Thorough cleansing of the oral cavity, especially during dentition and also later, after the teeth are fully formed, is of the greatest importance for many reasons, the chief of which is that the oral cavity furnishes the most favorable soil for the development of innumerable bacteria. A variety of solutions may be employed for cleansing the mouth, such as cold boiled water, physiologic salt solution, a 2 per cent. solution of sodium bicar-

bonate or sodium tetraborate, thymol 1 : 1500, a 1 per cent. solution of benzoic acid or boric acid, sodium borate or salicylate, or a $\frac{1}{10}$ per cent. (1 : 1000) solution of potassium permanganate. The following mixture is highly recommended by Miller:

℞ Thymol, 0.35 (gr. v);
Acid. benzoic., 3.0 (gr. xlv);
Tinct. eucalypt., 15.0 (ʒss);
Alcohol. absol., 100.0 (ʒiij);
Ol. menth. piperit., (gtt. xx).—M.

Sig. One dessertspoonful in one-half wineglass of water (that is, until a distinct turbidity is produced).

We may also mention: eau de Botot, eau de Pierre, Eucalyptus-mundwasser, tincture of myrrh, tincture of guaiac, etc. (a few drops in a glassful of water).

Older children with fully formed teeth should have their teeth brushed several times a day, or at least after each meal and before going to bed, with a soft toothbrush dipped in one of the above-mentioned mouth-washes, and after this cleansing process the mouth should be rinsed several times.

Although early caries of the teeth is not always caused by neglect of the teeth, since constitutional disease, especially rachitis, plays an important part in its production, nevertheless certain well-known etiologic factors demand attention aside from the above-mentioned cleansing of the mouth.

Acids of all kinds, such as are formed in the oral cavity from food-remains or during febrile diseases, and such as are introduced with the food, favor the production of caries. The latter group of acids includes those derived from grapes, apples, pears, etc., as well as citric and lactic acids, the latter being formed by the conversion of sugar in the mouth, especially when the food contains a large quantity of sugar. Sudden changes of temperature, caused by the introduction of excessively hot or excessively cold solid or liquid food, also destroy the enamel of the teeth and thus act in the same way as an acid in the mouth.

The first set of teeth requires the same care as the permanent set. At least twice a year they should be examined by a

dentist, and the slightest spot of caries, especially in the molars, should at once receive appropriate treatment. Especially important is the care of the oral cavity under pathologic conditions, such as are present in all infectious and febrile diseases. Owing to the insufficient mastication, the slow secretion of saliva, and the increased formation of bacteria, the mucous membrane of the mouth is much exposed to grave complications; while, on the other hand, the same conditions increase the aversion to the taking of food. In very severe febrile diseases, especially when the mind is not quite clear, the oral cavity must be wiped out with a moist cloth at intervals of two or three hours, especial care being exercised to remove the coating from the tongue. The patient should also be urged to drink at frequent intervals.

As these measures are difficult to carry out when the patient's lips are chapped and bleed at the slightest touch, the lips must be constantly treated with lanolin or with some lip ointment (rose cerate and simple ointment), or with glycerin diluted with water. By careful attention to these details it is often possible, in the most severe cases of disease, to prevent a fuliginous coating, fissured tongue, stomatitis, and thrush.

Mumps (*Parotitis Epidemica*).—An epidemic or endemic infectious disease caused by some unknown contagium, the principal feature of which is inflammation of the parotid gland and edematous swelling of the surrounding tissues. After an incubation period which usually lasts two weeks the disease begins with pain over the parotid gland at the angle of the jaw, which is increased by opening the mouth and by touching the parts; and is sometimes ushered in by violent fever. Soon the parotid gland on one or both sides is seen to be swollen. The inflammatory symptoms increase, and the serous swelling of the surrounding parts causes a marked disfigurement of the face and neck and interferes greatly, not only with the movements of the head, but also with the muscles of the mouth, particularly the muscles of mastication. Rarely the submaxillary glands are also involved in

the inflammation, and in very rare cases the disease begins in the latter, and the parotids are affected only secondarily or escape altogether. After a few days the fever subsides, the swelling of the glands diminishes, and in two weeks at the most the normal appearance is restored. Sometimes, especially in scrofulous individuals, the glandular swelling is slow to disappear, and in rare cases induration remains for life on one or both sides. Occasionally suppuration may develop in the parotid gland, and temporary or permanent facial paralysis from pressure on the branches of the nerve may be observed. Among annoying complications may also be mentioned disease of the middle ear, which may be due either to the rupture of parotid abscess into the auditory canal or to the presence of a metastatic exudate. In older boys orchitis may also occur as the result of metastatic infection. It is accompanied by the same initial phenomena, but usually runs an uncomplicated course. In very rare cases the lacrimal glands also become enlarged. As in most infectious diseases, a temporary albuminuria has occasionally been observed in epidemic parotitis.

Aside from the very rare complications which have been mentioned, the *prognosis* of the disease is favorable.

Treament.—During the first days, while there is fever, the child must be kept in bed on liquid diet, which is also indicated by the increasing difficulty in taking food. The swollen glands may be covered with compresses of dilute aluminum acetate and Billroth-batiste, which should be changed several times a day, depending on the severity of the condition. The application of heat seems to be grateful, and a simple cotton- or ointment-dressing is enough in some cases.

If absorption is delayed, iodin ointments or iodovasogen may be employed with massage. If an abscess develops in the gland, it must be incised as soon as possible. The mouth always requires the most scrupulous care. The same treatment is indicated if orchitis develops as a complication; the affected testicle must be elevated or a suspensory applied. Facial paralysis is treated by means of electricity; if disease of the ear develops, a specialist should be consulted.

Murmurs, Heart. See HEART, DISEASES OF.

Muscular Atrophy, Progressive. See PARALYSIS, PSEUDOHYPERTROPHIC.

Muscular Dystrophy. See PARALYSIS, PSEUDOHYPERTROPHIC.

Myelitis (Diffuse Transverse Myelitis and Compression-myelitis).—Inflammation of the spinal marrow occurs rarely in childhood as the *result* of infectious diseases, syphilis, a bad cold, tumors or traumatisms; more frequently it is due to some carious process in the vertebræ. In such a case the term compression-myelitis is employed.

The pathologic changes in the diseased spinal marrow range from a slight hemorrhagic softening to purulent disintegration; in every case infiltration with fatty degeneration or proliferation of the neuroglia and atrophy of the ganglion-cells develops in the latter stages of the disease.

The *symptoms* produced by the disease depend partly on the cause and partly on the extent and severity of the disease. In very rare cases the course is acute and associated with high fever. As a rule it is protracted and attended by moderate fever, and gradually developing paralysis of the parts below the lesion, the extent and degree of the paralysis depending upon the seat and intensity of the disease.

In cervical myelitis flaccid paralysis of the upper and sometimes of the lower extremities, followed by atrophy of the limbs, or even paralysis of the thoracic muscles, is found. The tendon reflexes in the upper extremities are exaggerated. In disease of the lumbar portion flaccid paralysis followed by atrophy of the lower extremities is observed; the tendon reflexes disappear, and pressure sores develop on the sacrum on account of the anesthesia.

On the other hand, disease of the thoracic portion of the cord causes spastic paralysis of both lower extremities with exaggeration of the tendon reflexes. Disturbances of the bladder and rectum (retention, incontinence of urine, con-

stipation, incontinence of feces) may occur in myelitis of any part of the spinal cord. It is not uncommon to see degenerative atrophy develop rapidly in the paralyzed muscles, or a bed-sore—a sign of disease of the trophic centers—makes its appearance. The symptoms here described are, however, preceded by other disturbances, particularly in subacute and chronic cases. These disturbances consist of paresthesiæ, such as formication, numbness ("going to sleep") of the affected muscle-groups, or of hyperesthesia, and, occasionally, of retention of feces and urine and partial spasm of the muscles.

The acute cases, which are rare, rapidly terminate in death; in the chronic cases, especially when due to caries of the vertebræ, the disease may last for years.

The *treatment* consists in the local application of cold to the focus of the disease as determined by the clinical symptoms. If there is disease of the vertebræ the child is kept in a plaster-of-Paris bed until sensitiveness to pressure disappears, when an orthopedic apparatus is applied. It is in just these cases that the paralytic symptoms are often observed to disappear with astonishing rapidity.

The internal treatment depends on the cause and may consist of antisyphilitic or antiscrofulous remedies. The *diet* must be as nutritious as possible, and the hygienic surroundings require due attention. During the later stages electric treatment and the employment of lukewarm baths, with or without mud, brine, etc., may be considered.

Myocarditis. See HEART, DISEASES OF.

Myxedema. See CRETINISM.

Myxidiocy. See CRETINISM.

Nævus Pigmentosus.—These abnormal pigmentations vary very greatly in number and extent, appearing in the form of more or less deeply pigmented patches, sometimes absolutely black in color. Occasionally the skin is wrinkled

or pinched up in folds and covered with hair. Circumscribed nevi, if not too extensive, may be extirpated or removed with the Paquelin cautery or by electrolysis. Sometimes painting with ichthyol collodion (1 : 9) or vaccination is successful in causing small nevi to disappear, just as in the case of telangiectatic tumors.

Nanism (*Chondrodystrophia Fœtalis*).—Various forms of dwarfism are distinguished. Pure nanism consists in an arrest

FIG. 103.—Chondrodystrophic child ten years of age.

FIG. 104.—The same child compared with a normal child of the same age.

of growth, the bones being normal as regards shape and proportions. In this form the cartilaginous joints at the epiphyses remain open.

In **rachitic nanism** the abnormal size of the individual is due both to arrested growth of the skeleton and to bending of the bones, especially curvatures in the bones of the vertebral column. Special forms of arrested development may also be caused by a variety of diseases, especially myxedema (see CRETINISM).

In **chondrodystrophic nanism** (*achondroplasia*) the condition is due to fetal disease of the bones, arresting the growth especially at the epiphyseal ends of the long bones—that is to say, at the points where longitudinal growth normally takes place. Accordingly, the head and trunk in dwarfs of this class are of the normal length, while the arms and legs are considerably shorter. Other characteristic features are the depression of the nose, owing to shortening of the base of the skull, the presence of thick deposits of fat in the gluteal region, the lordosis, the greatly contracted so-called chondrodystrophic pelvis, and the peculiar shape of the hand (three-pronged hand, see Fig. 103). Most of these children are stillborn; those who survive are normal as regards their intelligence, and in that respect differ from myxedematous subjects with whom they are not infrequently confused.

Natural Feeding of Infants. See FEEDING, NATURAL.

Navel, Diseases of. See UMBILICUS, DISEASES OF.

Necrosis of Bone. See CARIES AND NECROSIS OF BONES.

Nematodes. See INTESTINAL PARASITES.

Neoplasms.—A great variety of both benign and malignant growths occur in childhood, some congenital and some acquired. As in the case of adults, the distribution, as well as the sequelæ, presents the greatest variety. On account of the rarity of many new growths, and sometimes on account of the difficulty of diagnosis, they frequently have merely a scientific interest in pediatrics. All accessible forms of neo-

plasms require surgical treatment sooner or later, depending on their tendency to spread and increase in size.

Nephritis, Parenchymatous (*Acute Inflammation of the Kidneys*).—Acute inflammation of the kidneys occurs occasionally in children as a result of exposure to cold. More frequently it is secondary and follows especially the infectious diseases, of which scarlet fever and diphtheria should be mentioned first. It occurs also after severe intestinal diseases, angina, pneumonia, chronic diseases of the skin, especially eczema, extensive burns, and the exhibition of certain drugs, as the tar or iodin preparations, chrysarobin, styrax, naph-

FIG. 105.—Sarcoma of the left scapula in a child three years of age.

thalin, salicylic acid, turpentine, potassium chlorate, and other irritating substances. The *pathologic findings* include every form of acute nephritis seen in the adult. **Scarlatinal nephritis** presents a typic picture which is well described by the term glomerulonephritis. The most prominent and constant feature of this form is inflammation of the glomeruli with parenchymatous and interstitial changes of lesser and variable degree.

It has already been mentioned that, aside from the rare primary forms, the **postscarlatinal** and **postdiphtheritic** are the ones that are observed most frequently. The onset may be acute or gradual, and the disease is characterized by the

following *symptoms*, an accurate observation of which is important both from a clinical and from a prognostic standpoint.

The most important *sign* that nephritis has developed, even when the elevation of temperature is but slight and there is but little pain or sense of pressure in the region of the kidneys, is the alteration in the excretion of urine. As a rule, the quantity is considerably diminished; the urine is concentrated, sometimes of a blood-red and sometimes of a dark-red-brown color, and the sediment is abundant. The patient early exhibits lassitude, headache, vomiting, somnolence, or restlessness; the face is strikingly pale, and the signs of beginning edema are seen in the lids. These symptoms may increase gradually or rapidly. The cutaneous edema becomes more and more marked on the lower part of the abdomen, the genitalia, and the extremities, and, finally, the clinical picture develops into that of universal dropsy. The last expressions of dropsy are represented by transudation into the pleural cavities, the pericardium, and the peritoneal cavity.

Another class of cases runs a different course: the excretion of urine ceases almost entirely from the very beginning, and the disease is ushered in by uremic symptoms. The latter consist in violent, cephalic (cerebral) vomiting (see MENINGITIS, PURULENT), headache, great restlessness or somnolence, sudden loud outcries, visual disturbances, and, finally, mental torpor and hebetude, going on to complete loss of consciousness, profound prostration, dyspnea, tracheal râles, the symptoms of edema of the larynx and of the lungs, and convulsive twitching or violent clonic or tonic convulsions, during which the patient usually succumbs. Occasionally cases are seen in which after anuria lasting several days no uremic attack takes place, as well as cases in which a severe uremic attack takes the physician by surprise before any marked changes in the excretion of urine, especially as regards albumin, have been discovered.

The behavior of the pulse in acute nephritis is most characteristic and very significant in a prognostic sense. In the milder cases it is regular and merely shows an increase of

tension; in uremia, on the other hand, it is slow, irregular, and, in fatal cases, accelerated and thready toward the end.

In addition to the above-described clinical phenomena important data for the *diagnosis*, as well as the *prognosis* of the disease are obtained by noting the daily quantity of the urine excreted and examining the secretion both chemically and microscopically. Microscopic examination reveals red blood-cells in variable numbers, leukocytes, epithelium, and tube-casts, the latter at first hyaline and later granular.

The prognosis of nephritis depends on the acuteness of the onset, the degree of diuresis, the strength of the heart, and the severity of the concomitant symptoms.

Termination in chronic nephritis (chronic hemorrhagic nephritis or typical contracted kidney) and the occurrence of relapses are, to say the least, very rare events.

Not infrequently the attending physician is surprised by the sudden development of pneumonia, pleurisy, peritonitis, meningitis, endo- and pericarditis, phlegmones, and gangrene.

Equally as dangerous as an uremic attack is the development of acute dilatation of the left ventricle, which may lead to sudden collapse and death. The development of hypertrophy of the left ventricle is almost regularly seen in protracted cases.

It follows from the above description of the symptomatology that the treatment consists chiefly in promoting diuresis and improving and maintaining the strength of the heart.

Treatment.—The therapeutic measures to be employed depend in the first place, and aside from other clinical phenomena, on the quantity and appearance of the excreted urine. In mild cases of nephritis, when the quantity of urine is fairly large, copious draghts of some saline mineral water (Giesshübl, Krondorf, Preblau, Bilin, Vichy, Fachingen, Wildungen), with a Priessnitz compress to the lumbar regions renewed every two or three hours, will be all that is necessary besides keeping the patient in bed and regulating the diet, as will be explained presently. But when the urine contains much blood and is diminished in quantity, or if anuria is a prominent symptom and the signs of uremic

intoxication begin to appear, active measures must be adopted to stimulate diuresis, and for this purpose there is nothing better than a hot bath at 30° R. (99.5° F.) and of half an hour's duration, which should be given one to three times a day. During the bath a cold compress or an ice-pack is applied to the head. When the patient is removed from the bath he is wrapped in a bathing-cloth which has been previously warmed, and covered with a thick blanket, well tucked in around the sides, and put back to bed. In order to stimulate diaphoresis, hot milk, warm sugar-water, linden-blossom, or camomile, tea should be given in teaspoonful doses. The patient is allowed to sweat for two hours and is then removed from the pack, rubbed dry with warm cloths, and the body-linen, as well as the bedclothes, changed. The latter should be previously warmed. Even an uremic attack is no contraindication to the employment of hot baths, but under such circumstances the patient should not be allowed to sweat after the bath. A hot wet-pack of an hour's duration may be substituted for the hot bath. In addition to these hydrotherapeutic measures, the following remedies may be given to stimulate diuresis and improve the strength of the heart:

Infusion of digitalis, 0.20 gm. to 70 c.c. (3 gr. to 2¼ fl. oz.); tincture of strophanthus, 2 to 5 drops three or four times a day; when the pulse is weak, caffein natrio-salicylate 0.02–0.05–0.10 to 0.20 gm. (⅓–¾ to 1½–3 gr.) three or four times a day in powder form or in solution; diuretin up to 3 gm. (45 gr.) per diem; agurin up to 1 gm. (15 gr.) per diem; potassium acetate 2–5 gm. to 100 c.c. (30–75 gr. to 3 fl. oz.) of water; infusion of juniper berries 5 gm. to 100 c.c. (75 gr. to 3 fl. oz.), with solution of potassium acetate and inspissated juice of juniper, each 10 c.c. (2½ fl. dr.); or decoction of ononis spinosa, 5 gm. to 100 c.c. (75 gr. to 3 fl. oz.), oxymel of squill 10 gm. (2½ dr.), one teaspoonful or dessertspoonful every two hours; or lithium carbonate up to 0.30 gm. (4½ gr.) per diem.

If the urine contains much blood, styptics must be prescribed: Ergotin (Bombellon) 0.5–2 gm. to 100 c.c. (7½–30 gr.

to 3 fl. oz.); or ergot in the form of infusion, 0.5–1 gm. to 100 c.c. (7½–15 gr. to 3 fl. oz.); or solution of the sesquichlorid of iron 2 to 100 c.c. (30 min. to 3 fl. oz.), or a 2 per cent. gelatin solution, one teaspoonful or dessertspoonful every one or two hours; or tannalbin 1.5 gm. (23 gr.) per diem. The last-mentioned drug, as well as quinin tannate, up to 1 gm. (15 gr.) per diem, is also used to diminish the quantity of albumin in the urine. Free evacuation of the bowels must be secured by means of laxatives, such as hydromel infantum, or powdered rhubarb, or tincture of rhubarb or castor oil; but never calomel.

When the uremic symptoms enter the convulsive stage, chloral hydrate internally 1–5 gm. to 100 c.c. (15–75 gr. to 3 fl. oz.) of a mucilaginous mixture, one dessertspoonful every half-hour or hour until an effect is produced; or a chloral enema, 0.25–0.5 to 1 gm. (4–8 to 15 gr.) to the dose, is indicated. In case of collapse, stimulants are required, in the form of hypodermic injections of camphorated oil, one-half to one Pravaz syringeful; aromatic spirit of ammonia or acetic ether 2 to 10 drops, every half-hour or hour, to one teaspoonful of water; or benzoic acid 0.25–0.50 gm. (4 to 7½ gr.), and white sugar 2 gm. (30 gr.), in ten powders, one powder every two hours; or strong wine or champagne in tablespoonful doses.

Venesection is sometimes followed by good results in severe uremic attacks.

The *diet* during the acute stage should consist solely of warm or cold milk, the latter also in the form of ice cream. If the patient's repugnance cannot be overcome even after sour milk, kefir, or kumiss have been tried, milk flavored with a little malt-coffee or cocoa or very light Russian or camomile tea, or milk soup may be given. The strict milk diet should not be relaxed until the excretion of urine begins to increase and the albumin diminishes. A constant watch must be kept on the latter by testing the urine, and if there is any sign of increase, the patient must be put back on a milk diet. Gradually, dishes prepared with milk, not too thick, chicken bouillon containing some food such as eucasin,

sanatogen, or nutrose, wheat bread with butter, later eggs, green vegetables, hulled fruits, or potato purée and farinaceous foods are added to the diet. Meat is added to the list last of all; at first white meat, such as fish, veal, or chicken, and after the urine has been free from albumin for several days, dark meat and stewed fruit may be considered. Alcoholic beverages are to be forbidden, both during an attack of nephritis and afterward. They may, however, be used as heart stimulants, but only when the indications are urgent. During convalescence, quinin and iron preparations should be given for the anemia which remains.

Nephrolithiasis. See URIC ACID INFARCT.

Nervous Palpitation of Heart. See HEART, DISEASES OF.

Nettle-rash. See URTICARIA.

Neuralgia.—Neuralgic pains, elicited also by pressure with the finger-tip, especially in the distribution of the trifacial nerve, are observed in childhood, and *occur* both in acute and in chronic diseases of the nasopharyngeal space and of the antrum of Highmore, and especially after influenza. Other infectious diseases may also give rise to neuralgias; for instance, the typical nerve pains after malaria.

The disease usually runs a benign course and chiefly requires *treatment* directed against the cause. To relieve the pain frequent external application of 5 to 10 per cent. spirit of menthol or chloroform may be tried. Internally, large doses of quinin, aristochin, euquinin, or pyramidon and aspirin, if possible administered before the beginning of the attack, act favorably even in those cases in which malaria can be excluded.

In the rheumatic cases wet-packs to the head and diaphoretics are recommended.

Nervous or hysteric children require, in addition, a course of treatment with iron and arsenic preparations.

Neuralgia of the Mammary Glands. See MASTODYNIA.

Night Cough, Periodic.—This condition is often present without any organic change in the respiratory organs, and is particularly *frequent* in nervous and irritable children, in those who inherit a disposition to hysteria, and in children with chronic nasal or pharyngeal catarrh or adenoid vegetations. In many respects the paroxysms present a certain similarity to night terror or *pavor nocturnus*.

In rarer cases periodic night cough forms the initial stage of a beginning pulmonary tuberculosis or represents a concomitant symptom of enlargement of the bronchial glands.

Usually, after the child has been asleep for several hours, it awakes suddenly, weeping and crying out, and begins to cough. The cough is dry, convulsive, and persistent, but finally ceases after lasting an hour or so, and the exhausted child sleeps on for the rest of the night without being disturbed.

These attacks are often repeated every night, and even in the absence of any grave basal trouble the loss of sleep causes a serious disturbance of the general health, which shows itself in a change of disposition and in anemia, quite apart from the nervous irritation which is often the primary cause of the condition. Not infrequently the trouble ceases abruptly after a duration of weeks, or other disturbances belonging to the domain of nervousness or hysteria develop in its place.

Treatment directed against the nervous causes which lie at the bottom of the trouble is often successful. In some cases the administration of quinin hydrobromate or valerianate in doses of 0.10–0.50 gm. (1½–7½ gr.) three to five times a day, in wafers or solution, or the bromid preparations, as sodium bromid, 0.25–0.50 gm. (4–7½ gr.), or a tablespoonful of Erlenmeyer's effervescent bromin water, is followed by good results.

A warm bath in the evening at 27° R. (92.7° F.), lasting from 15 to 20 minutes, is of material value in the treatment. If some local disease of the nose or of the pharyngeal organs is present it may require surgical treatment.

Night Terror. See PAVOR NOCTURNUS.

Nipple, Fissures of, with Galactostasis.—If the nipples have not been sufficiently hardened beforehand (see FEEDING, NATURAL), the act of nursing sometimes produces a slight abrasion with at first superficial loss of epithelium. Continued irritation may lead to more marked erosions or fissures of the nipple. The injury may be caused by forced sucking movements, by putting the baby to the breast too frequently and allowing it to remain after it has finished feeding, or by a bite from the infant's teeth. A slight wound may become infected and thus lead to infection of the mammary gland, which may involve either the entire gland or only individual sectors.

As even a small fissure of the nipple often causes excruciating pain and thus becomes a bar to the act of nursing, the *treatment* of sore nipples demands the most careful attention. Whenever the mother complains of pain in the nipple during the act of nursing the breast must be minutely inspected, and if there is the slightest or most superficial abrasion, it must receive proper treatment. In many cases borated vaselin in the strength of 5 to 10 per cent. is sufficient; when the fissures are deeper or more extensive they should be touched with a 5 to 10 per cent. solution of carbolic acid, thoroughly dried, and then covered with the above-mentioned borated ointment. If the pain continues during the act of nursing, in spite of the application of carbolic acid, the fissures must be touched with a 2 to 5 per cent. solution of cocain; but immediately before the baby is put to the breast the cocain or carbolic acid solution, as well as the borated ointment, must be carefully washed off. In order to protect sore or sensitive nipples from further injury while the abrasions are healing, artificial nipples may be used during the act of nursing (Figs. 39–46).

If stagnation of the milk (galactostasis) develops, as often occurs in association with fissure of the nipple, the affected gland must be elevated by means of a supporting breast bandage, and compresses wrung out of aluminum acetate solution

applied several times a day. If the symptoms do not promptly subside under this treatment inflammatory masses, at first circumscribed and later confluent, may develop in the acini of the gland, and an abscess forms. As soon as the induration softens and the outer skin becomes inflamed and attenuated, and distinct fluctuation can be detected, the abscess must be opened by one or more radiating incisions, and the wounds kept open by packing with strips of iodoform gauze or drainage tubes until complete healing is effected.

Galactostasis due to an abundant secretion of milk and insufficient removal by the infant must be corrected by emptying the breast with the breast-pump, by putting another healthy child to the breast several times a day, or by suspending the breasts in a sling passing over the shoulders, discarding tight clothing, restricting the diet, and, if necessary, administering laxatives.

Nodding Spasm. See SPASMUS NUTANS.

Noma (*Cancrum Oris*).—This rare disease of childhood occurs almost exclusively during convalescence from other diseases, especially measles, typhoid and scarlet fevers, and is characterized by rapidly spreading gangrene (Fig. 106).

The seat of predilection is the cheek near the angle of the mouth, rarely the vulva and anal region. The affected area becomes swollen and edematous, and varies in color, and a nodule forms which soon becomes gangrenous, the process beginning on the inner side of the cheek. The destruction extends to the epidermis, progresses rapidly and goes on to extensive necrosis of the skin and of the bony structures. At first the general condition is but little affected; but as the disease progresses the symptoms observed in septic processes are noticed, and most of the cases terminate fatally.

Occasionally, a line of demarcation is formed, and spontaneous recovery takes place; but disfiguring scars remain.

Until recently, the *treatment* of this condition was hopeless; much more favorable results are, however, obtained nowadays by thorough excision of the gangrenous ulcer and

cauterization of the wound-edges with the Paquelin cautery or nitric acid. In any case, the patient's strength must be kept up by administering a nutritious, chiefly liquid, diet and prescribing suitable doses of alcohol.

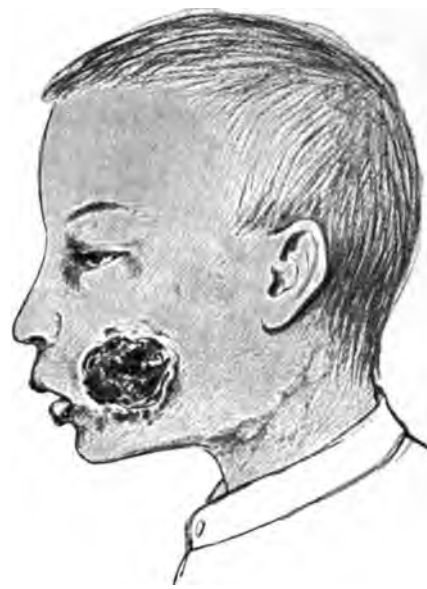


FIG. 106.—Noma in a boy eight years of age.

Nose-bleed. See EPISTAXIS.

Nystagmus.—The most important *etiologic factor* in this condition is rachitis. In addition, the same causes as those which occur in spasmus nutans (*vide*) are observed, such as working with insufficient light, overexertion of the ocular muscles in fixing objects, diseases of the lens or opacities on the cornea, other debilitating disease elsewhere in the body, and neuropathic heredity.

Nystagmus is frequently observed in association with tremor of other portions of the body in multiple sclerosis. Nystagmus *consists* in continuous movements of the eyeballs, which are increased and become more marked when the patient fixes an object; during sleep and when one or both

eyes are bandaged the movements disappear. Sometimes nystagmus is associated with blepharospasm and strabismus of one or the other eye.

Treatment.—The condition sometimes disappears of its own accord. Treatment must depend on the cause, and should be antirachitic; if the hygienic surroundings are unfavorable, a change of residence is required. In some cases the trouble resists every form of treatment; and if disturbances of accommodation are found to be present, some improvement may be achieved later by the use of suitable glasses.

Obstruction, Intestinal. See INTESTINAL OBSTRUCTION.

Omphalitis. See UMBILICUS, DISEASES OF.

Onanism. See MASTURBATION.

Ophthalmia Neonatorum. See CONJUNCTIVITIS NEONATORUM.

Osteogenesis Imperfecta. See RACHITIS, CONGENITAL.

Osteomyelitis.—Diseases of the periosteum and of the bone in the form of periostitis and osteitis are not rare in children. The *causes*, aside from factors referable to the scrofulous diathesis, include various accidental injuries. But disease of the bone-marrow, or osteomyelitis, may occur in the absence of direct injury or of any predisposition to the disease elsewhere in the body, either as a result of metastasis after an infectious disease or as an independent affection; in the latter case probably caused by cocci closely related to the staphylococcus pyogenes aureus. Acute osteomyelitis sometimes presents the most violent symptoms, with high fever and chills, and runs a fatal course; or the fever may be remittent, the overlying soft parts undergo swelling, the affected parts become painful, and an abscess forms in the bone-marrow. If the process is protracted it gradually

involves the bone and periosteum, causing painful secondary swelling and the formation of sequestra (Fig. 107). If a positive diagnosis is made, if necessary by means of a Röntgen ray picture, the *treatment* consists in the local application of ice-compresses, wet-packs, or the administration of antipyretics to combat the high temperature, and immobilization of the diseased bone. If the diagnosis of bone abscess can be established beyond the possibility of a doubt, the abscess must be opened by operative means.

FIG. 107.—Necrosis of femur, the result of acute osteomyelitis (Warren).

Otitis. See EAR, DISEASES OF.

Otitis Media. See EAR, DISEASES OF.

Oxyuris Vermicularis. See INTESTINAL PARASITES.

Ozena. See RHINITIS, CHRONIC.

Pains, Growing-. See GROWING-PAINS.

Palpitation, Nervous. See HEART, DISEASES OF.

Palsy. See PARALYSIS.

Papilloma. See CONDYLOMATA ACUMINATA.

Paralysis, Cerebral.—The *causes* of this disease, which may be congenital or acquired, are in many cases unknown. The theory of an infectious origin is not without its justification, and in the acquired cases is confirmed by the fact that

cerebral palsy in children not infrequently follows an acute infectious disease. In many cases injuries affecting the skull must be included among the causes of the disease. In the congenital cases syphilitic or tuberculous disease or alcoholism on the part of the parents, and profound disturbance of nutrition or grave disease of the mother during pregnancy, are mentioned in the etiology.

The local findings in **congenital cerebral palsy** consist of sclerotic changes or defects in the cerebral cortex, porencephalus, and arrest of development of certain portions of the brain.

The pathologic changes in the brain in **acquired cases** are the remains of other diseases of the brain, such as meningeal or cerebral hemorrhages or embolic, thrombotic, or sclerotic processes.

Children with congenital cerebral palsy are born with more or less extensive palsies, depending on the extent of the congenital defect. Those who do not die quite young soon manifest the symptoms of idiocy as they grow older. In acquired cerebral palsy the clinical picture is different. After a short initial period of fever and vomiting, and sometimes without these, hemiplegic and paraplegic convulsions—usually of short duration—make their appearance in the muscles of the face and of the extremities; the pupils fail to react and there is more or less disturbance of consciousness.

After this initial stage of variable duration there develops a monoplegia or hemiplegia, or quite rarely a paraplegia, of the facial nerve, paralysis of the ocular muscles, and paralysis, at first flaccid, of one or both extremities, especially of the lower extremities, without any disturbance of sensation; in older children aphasia also is sometimes present.

These various forms of paralysis may gradually clear up, or there may remain limited motor disturbances with more or less marked spastic contractures, manifesting themselves in characteristic attitudes of the arms and legs. As in the case of infantile spinal paralysis, the growth of the paretic or paralytic extremities is arrested, the tendon reflexes are exaggerated, while the skin reflexes are diminished, and

equinovarus or equinovalgus deformities develop in the feet. Later the upper extremities become the seat of involuntary twitchings, which in some cases must be regarded as athetotic, and in others choreic. In association with these phenomena it is not uncommon to observe epileptiform and unilateral or bilateral epileptic convulsions, interference with the mental development, or even idiocy.

Although death rarely occurs in the initial stage in acquired cases of infantile cerebral palsy, the *prognosis* is nevertheless doubtful on account of the above-mentioned sequelæ, which cannot be determined beforehand.

Treatment.—During the initial stage the fever and the symptoms of cerebral irritation require attention. Cold applications to the head and a calomel purge or some mild laxative are employed. In the presence of convulsions chloral hydrate, either by mouth or in an enema, is indicated. The diet must be suited to the patient's age, unirritating, and, in most cases, liquid or semiliquid.

To combat the muscular paresis or paralysis a course of electricity with the faradic current, massage, active and passive movements after the manner of Swedish gymnastics, must be instituted and continued for months; the contractures resulting from the palsies require surgical treatment by an orthopedic specialist (orthopedic apparatus, surgical intervention in the form of arthrodesis, tenotomy, and transplantation; see also LITTLE'S DISEASE).

Paralysis, Facial.—In many cases facial palsy is congenital, *due* to injury sustained during a forceps delivery. More frequently it is due to disease of the mastoid process (petrous portion of the temporal bone) secondary to chronic otitis media, to a rheumatic condition, to pressure of enlarged glands after mumps, to some inflammatory process of the meninges, or to cerebral focal disease.

Depending on the cause and seat of the disease, the paralysis of the facial nerve may be partial or complete. The outward signs are well known: inability to wrinkle the skin of the forehead, lagophthalmus, obliteration of the nasolabial

fold, drooping of the angle of the mouth on the paralyzed side, and deviation of the uvula and soft palate (Fig. 108).

The *prognosis* is also determined by the etiologic factors.

The *treatment* consists in the employment of the faradic current, at first every day and later several times a week. In older children gymnastics for the facial muscles, consisting in the performance of certain grimaces by imitation, and

FIG. 108.—Left-sided facial palsy of eight years' standing in a girl ten years of age.

massage may be recommended; disease of the mastoid process requires surgical intervention (see EAR, DISEASES OF).

Paralysis, Plexus (Duchenne-Erb).—This form, which is also designated birth-palsy, is *produced* in breech presentation by the necessary manipulations in delivering the infant, in cranial presentations by distortion of the cervical plexus, or by injury of the plexus by fractured ends of bone; analogous injuries are responsible in older children.

The disease *manifests* itself by more or less complete paralysis of one of the upper extremities, not affecting the movements of the hand. Not infrequently it is accompanied by wry-neck and hematoma of the corresponding sterno-

cleido-mastoid muscle (Fig. 109). In the milder cases the paralytic phenomena disappear spontaneously. Occasionally, however, almost complete flaccid paralysis of the affected muscles remains, and is susceptible of only partial improvement in individual muscle groups, even after a long-con-

FIG. 109.—Right-sided Duchenne-Erb paralysis in a child two years of age, associated with wry-neck of the same side (case of Prof. Redlich).

tinued course of faradization and massage. Partial atrophy and contractures usually result.

Paralysis, Pseudohypertrophic (*Duchenne's Paralysis*). —In this form, as well as in the juvenile variety of progressive muscular dystrophy, so named by Erb, and the Landouzy-

Déjerine type of infantile muscular atrophy with primary involvement of the facial muscles, and in hereditary muscular atrophy (Leyden-Möbius) we have to deal with a *degenerative process* beginning in some one of the various muscular regions, and presenting at first usually pseudohypertrophy and later atrophy, or both processes in combination. Erb includes all these four varieties in one class, under the name of progressive muscular dystrophy.

Of the above-named amyotrophies of myopathic origin,

FIG. 110.—Boy ten years of age with pseudohypertrophic muscular paralysis. Inability to rise from the floor has developed, and the child has difficulty in walking and standing.

pseudohypertrophic paralysis is relatively the most frequent. Like the other myopathies it occurs usually in boys; is hereditary, often running in families; and begins usually in the second or third year of life.

The *symptoms* observed at the beginning are great weakness of the lower extremities, manifested in walking and standing, and especially on attempting to rise (Figs. 110, 111).

The patient presents the characteristic picture of a child climbing up by his own legs, which is also observed during the initial stage of spondylitic processes. The diminution in the power and movement of the legs contrasts with the marked increase in the volume of the muscles, especially of the calves of the legs, more rarely of the thighs and buttocks. The gait is waddling and there is a lumbar lordosis.

FIG. 111.—Boy ten years of age with pseudohypertrophic muscular paralysis. Inability to rise from the floor has developed, and the child has difficulty in walking and standing.

The child becomes more and more awkward in his movements, and, owing to the weakness of the muscles of the back, the head falls forward in the sitting posture. Gradually the signs of atrophy become evident, although in some cases the fatty degeneration of the muscles in the lower or upper extremities leads to pseudohypertrophy of individual groups of muscles. In such cases atrophy in the muscles of the affected extremities is contrasted with marked hypertrophy in other portions.

Corresponding to the increasing atrophy, electric irritability gradually disappears and the tendon reflexes are completely abolished. Sensation, cerebral activity, and the functions of the bladder and rectum are not involved. The cyanosis and coldness of the affected extremities are attributed to vasomotor disturbances.

The *prognosis* is usually unfavorable.

Treatment.—Occasionally the increasing atrophy of the

muscles can be arrested for some time by the daily application of the faradic current, massage, and gymnastic exercises. This may be supplemented by stimulating baths, such as mud- or brine-baths, and rubbing with alcoholic solutions or camphor liniment.

Paralysis, Spastic Spinal. See SPASTIC SPINAL PARALYSIS.

Paralysis, Spinal (*Infantile Spinal Paralysis; Essential Paralysis of Children; Poliomyelitis Anterior Acuta*).—This disease usually makes its appearance suddenly in the first years of life and, like paralysis of central origin, appears to have some etiologic connection either with some other infectious disease or with some as yet unknown infection. In every case the gray matter of the spinal cord is involved, and the pathologic changes give rise to the symptoms which are regarded as typic of infantile spinal paralysis.

The *pathologic findings* explain the clinical picture observed in a fully developed palsy. The inflammatory process affects the anterior horns of the spinal cord, causing more or less extensive atrophy of the ganglia with subsequent sclerosis, which is followed by secondary degeneration of the corresponding motor nerve-fibers, and the resulting changes in the muscles and bones.

Infantile spinal paralysis always begins acutely with high fever, usually of short duration, and occasionally cerebral symptoms, such as vomiting, twitching, or convulsions. Within a short time after these more or less violent symptoms, all the extremities of the body, or only the legs or the arms, or the arm on one side and the leg on the other, are found to be the seat of motor paralysis. Although the paralysis of one or the other extremity usually disappears after a variable time, either completely or almost completely, yet in most cases partial flaccid paralysis remains, usually in the form of a monoplegia, or more rarely a paraplegia of the lower and, still more rarely, of the upper extremities, which later result in trophic disturbance and atrophy of the affected

limbs. These secondary phenomena are responsible for the various external changes in the paralyzed extremities, which hang limply and later assume attitudes of partial contracture. The development of muscles and bones is delayed and the structures show distinct signs of atrophy. As a result of the latter the lower extremities, which fail to grow properly in length, become the seat of degenerative changes in the form

FIG. 112.—Paralysis of both legs and paralytic club-feet, the result of acute anterior poliomyelitis, in a child eight months of age (two months after the attack).

of talipes equinovarus, equinovalgus, cavus or pes equinus, genu vulgum or varum, or subluxation at the hip-joint (see Figs. 112, 113). Cutaneous sensation and the functions of the bladder and rectum are absolutely unaffected, while the tendon reflexes are entirely abolished and the paralyzed extremities are cyanotic, cold, and moist with perspiration.

Although the *prognosis* of the disease as to life is almost always favorable, the same cannot be said of its consequences. While it is true that some of the palsies subside spontaneously,

others remain and cause permanent disability of one or more extremities, in spite of every form of treatment that may be kept up during the child's entire life.

The *treatment* during the acute stage calls for the same therapeutic measures as are required in other febrile diseases with cerebral symptoms.

FIG. 113.—Paresis, shortening and atrophy of the left leg, pes equinus of the left foot, and consecutive scoliosis, in a twelve-year-old boy—the result of infantile palsy.

The paralytic phenomena and consecutive atrophy chiefly demand attention. Electrotherapy is the most important factor in the treatment, but must not be begun until after the acute symptoms have completely subsided.

Galvanization is employed at first daily and later two or three times a week for from four to five minutes; the anode

is placed on the nape of the neck, the cathode on the paralyzed muscle. This treatment must be continued for years, depending on the severity and extent of the paralysis. If the muscular irritability improves under this treatment, it may be supplemented by periodic faradization.

Spinal palsy also presents a large field for surgical intervention and the use of orthopedic apparatus; although these methods of treatment are materially assisted by daily massage, active and passive movements, after the manner of Swedish gymnastics, stimulating baths containing brine, extract of pine needles, mud, or Feldauer Kiefer-Moor, and sponging with alcoholic solutions.

Paraphimosis.—This condition is produced by forced retraction of the prepuce over the glans followed by secondary constriction, inflammation, and edema of the preputial ring. In severe cases it is followed by partial necrosis of the skin.

The *cause* in most cases is probably active manual masturbation; more rarely some external cause can be found. In a recent case reposition of the constricted preputial ring, if done as soon as possible, is usually easy although somewhat painful, and the pain serves to deter the child from any attempt at onanism for some time. If it is found impossible to replace the prepuce after repeated attempts the constricted ring must be incised. The method of manual reposition is so simple that it needs no description. After the prepuce has been replaced it should be treated with cold absorbent dressings until the inflammation has subsided and any fissures that may have been produced have healed.

Paraplegia, Spastic. See LITTLE'S DISEASE.

Parasites, Intestinal. See INTESTINAL PARASITES.

Parenchymatous Nephritis. See NEPHRITIS, PARENCHYMATOUS.

Parotitis Epidemica. See MUMPS.

Parry's Disease. See GOITER, EXOPHTHALMIC.

Pasteurization of Milk. See FEEDING, ARTIFICIAL.

Pavor Nocturnus (*Night Terror*).—This condition, which is at first most alarming to the family and attendants, is in most cases due to one of those abnormalities which lead to disturbed sleep, such as adenoid vegetations, hypertrophy of the palatal tonsils, chronic nasal and pharyngeal catarrh, and gastro-intestinal disturbances. More rarely the condition must be attributed to schoolwork, fright, or the use of alcohol. In the more common, mild cases the child suddenly awakes in a fright after a few hours of sound sleep, but is perfectly conscious and does not go to sleep again for some time. Cases of true pavor nocturnus, however, are quite different. This form of the disease is observed almost exclusively in children who are neuropathic either by nature or by heredity, and may be the percursor or concomitant of some other nervous disease. After a sound and deep sleep the child suddenly awakes with evident signs of terror: crying out as if frightened by some terrible vision, and often breaking out in profuse perspiration. He stares into vacancy as though demented and fails to recognize his surroundings. After a variable time quiet is restored and the child at once goes to sleep again, and on the following day has no remembrance of the attack. These attacks often occur nightly or sometimes only after intervals of weeks or months.

The condition appears to be of some prognostic significance from the fact that grave nervous disturbances sometimes develop later in these cases, which should therefore be kept under careful supervision, especially as regards their mental condition.

The *treatment* in many respects is the same as that of insomnia and nervousness. In many cases it is important to see that the childish imagination is not excited by stories, and to guard against any form of excitement, such, for example, as that connected with school attendance, alcohol, or a hearty meal in the evening. It scarcely needs to be mentioned that any disease of the nasopharynx, if present, must be removed. In the evening the child should be given from

0.5 to 1 gm. (8–15 gr.) of potassium bromid, or a cup of valerian tea, or tincture of valerian, 10 to 20 drops, or quinin valerianate or bromid 0.20 to 0.50 gm. (3–8 gr.), or a protracted hot bath. In many cases hydrotherapeutic procedures have a good effect.

Pavy's Disease. See ALBUMINURIA, CYCLIC.

Pedatrophy. See ATROPHY.

Pemphigus Neonatorum.—This is an infectious disease, chiefly attacking newborn infants and babies, but transmissible to adults. It is *characterized* by the formation of bullæ involving the epithelial layer of the skin, which is separated from the rete Malpighii, and occurring in successive crops chiefly on the chest and abdomen, very rarely on the extremities. The blebs, which vary in size from that of a lentil to that of an egg, are at first tense and transparent and filled with clear serum, which later becomes turbid and purulent as the tension diminishes. After a few days the blebs rupture and leave a reddened patch, which continues to exude serum for a short time, but heals without leaving a scar. In rare cases, and then only during the initial stage, pemphigus is attended by slight febrile symptoms. Such is the course of **benign pemphigus.**

The bullous eruption may, however, be accompanied by various complications which justify the term **malignant pemphigus.** In this form the epithelium over large areas of the skin surface, or even over the greater part of the body, is destroyed as a result of confluence of the individual blebs, which are formed on a previously reddened skin. There may be high fever and profound general disturbance, and the condition sometimes goes on to septic infection and a fatal issue. The contents of the pemphigus blebs, which contain the staphylococcus aureus, may be transferred to other children and adults and produce a vesicular eruption, which is known as **impetigo contagiosa** (*vide*), and which for this reason has been regarded as identical with pemphigus.

Treatment.—In view of the contagiousness of the disease, asepsis in the handling of newborn infants is important from a prophylactic standpoint; if the infant is diseased, the aseptic precautions must be extended to its attendant.

For the pemphigus eruption lukewarm baths at 28° R. (95° F.) twice a day, medicated with oak-bark, [500 gm. to 4 L. (1 lb. to 1 gall. of water), to be boiled for one-half hour and added to the bath—ED.], are recommended. After the bath the child's body is dusted with dermatol, 1 : 9 of starch powder, and wrapped in cotton without being rubbed dry.

Large pemphigus blebs require a proper surgical dressing with dilute aluminum acetate, 2 per cent. boric acid, or ½ per cent. salicylic acid solution, or with thymol, 0.10 gm. (1½ gr.), to lime-water and linseed oil, each 50 c.c. (1½ fl. oz.). Pemphigus malignus demands, in addition to this treatment, careful feeding to keep up the strength, and besides the oak-bark baths a disinfectant bath once or twice a day with lysol, creolin, or lysoform, one to two tablespoonfuls to the bath.

Pericarditis. See HEART, DISEASES OF.

Peritoneum, Inflammation of. See PERITONITIS.

Peritonitis, Acute.—Acute peritonitis may be **primary** or **idiopathic** and *due* to traumatism, burns, or exposure to cold; it is more frequently **secondary** to disease of the intestines, such as intussusception, volvulus, perforation, perityphlitis, dysentery; or it follows pneumonia or pleurisy, or a septic infectious disease, such as typhoid fever, scarlet fever, variola, phlegmonous angina, septic disease of the umbilicus, and erysipelas of the newborn; in very rare cases it represents a complication of vaginal gonorrhea.

In acute peritonitis the exudate is either serous, or serofibrinous, or purulent. The peritoneum becomes thickened, and adhesions are produced between the loops of intestines, with the formation of an exudate which may be free or encapsulated. The *symptoms* of the disease are violent from the onset, and consist in fever and vomiting, with gradual

increasing pain in the abdomen. The pain increases in intensity along with the meteorism; the patient lies motionless in bed, the face distorted with pain, the legs flexed on the abdomen, until released by death, which is preceded by the signs of profound collapse; or, in favorable cases, the pulse improves, the temperature falls, thirst diminishes, urination and defecation are increased, and the symptoms moderate and gradually disappear. In such cases a free or encapsulated exudate can be demonstrated. If the exudate is purulent, the temperature curve shows evening rises which are often quite considerable. During the subsequent course of the disease the purulent exudate may behave as in appendicitis (*vide*), and in many of these cases the only proper treatment is surgical; in other respects the treatment of acute peritonitis is the same as that of appendicitis.

During the acute stage ice-compresses are applied locally, or several ice-bags may be suspended from a wooden hoop inserted in the sides of the bed (ice-cradle), or alcohol compresses, and later moist warm compresses, may be used. Internally, ice-pills and opium are given, and, for the purpose of keeping up the strength, iced drinks, such as milk, or tea with milk, bouillon or meat-juices and wine, are administered in tablespoonful doses. If the grave symptoms, especially the pain, subside, absorption of the exudate is encouraged by means of Priessnitz compresses, a soft-soap cure (*vide*), or inunctions with mercurial ointment or unguentum Credé. For the sluggishness of the bowels, which persists for some time, enemata must be ordered. In rare cases, in which a purulent encapsulated exudate can be demonstrated (abdominal empyema), an operation should be performed without waiting for rupture to take place, as the empyema usually ruptures through the umbilicus, the rectum, or the bladder.

Peritonitis, Chronic.—Primary chronic peritonitis without tuberculosis is the result of an acute inflammation of the peritoneum; or it may be chronic from the start and attended with the gradual exudation of fluid into the peritoneal cavity

and the partial formation of a plastic exudate with adhesions. The *etiology* usually remains in doubt. Sometimes the history of an injury, exposure to cold, or a recent attack of measles is discovered as the cause. The disease, which, generally speaking, is very rare, usually attacks children between the ages of six and twelve.

Corresponding to the gradual development of the disease itself, the sequelæ are also slow to develop, and the clinical signs do not become noticeable until the disease has attained a certain degree of severity.

The abdomen continues to increase in size as a result of the exudation, and a feeling of pressure and digestive disturbances are the first *symptoms* noted. During the initial stage the general health is but little affected. As the ascites increases, however, and interferes with movement, anorexia, constipation, dyspnea, and palpitation develop, and the child becomes emaciated. The abdomen often becomes enormously enlarged and barrel-shaped, the umbilical folds are obliterated or an umbilical hernia is formed, the skin covering the abdomen is attenuated, glistening, marked with lines and traversed by venous plexuses.

The *prognosis* of simple chronic peritonitis with serous exudate is not unfavorable. The exudate often disappears spontaneously, or a single puncture may be followed by permanent cure—much to the attending physician's surprise. Sometimes adhesions remain and interfere with the functions of the bowel.

The *treatment* consists in rest in bed and an easily digestible diet adapted to the degree of appetite present, and, if there is constipation, the use of mild laxatives. Internally, the syrup of iodid of iron (three times a day, 5 to 15 drops), or saccharated iodid of iron, 0.05 to 0.1 gm. ($\frac{3}{4}$–$1\frac{1}{2}$ gr.), three times a day; pastilles of iodo-ferratin (Jahr), 2 to 4 a day, or other iron preparations are indicated. It is always well to try the effect of diuretic remedies. Externally, warm wet compresses to the abdomen, saturated with water or Halleiner Mutterlauge, or inunctions with 6 per cent. iodovasogen or ichthyol-vasogen, a 5 to 10 per cent. ointment of ichthyol, or

an ointment consisting of iodin 0.10 gm. (1½ gr.), potassium iodid 1 gm. (15 gr.), vaselin and lanolin, āā 5 gm. (75 gr.), may be ordered. Or the abdomen may be painted with iodoform collodion, 1 : 10, taking care not to produce an eczema. During convalescence, a soft-soap cure (*vide*), careful massage, and the use of brine- or iodin-baths have a good effect.

As has been mentioned, paracentesis of the abdomen should be strongly urged if the ascites is marked. It is possible that many of the cases of [supposed] tuberculous peritonitis that have been cured by laparotomy were really cases of chronic non-tuberculous peritonitis. [As this operation permits the inspection of the peritoneum and visual confirmation of the diagnosis, it is unlikely that such an error could be made in the vast majority of the reported cases.—ED.]

Peritonitis, Tuberculous.—In spite of the comparative frequency of tuberculosis in childhood, and in spite of the fact that it is usually secondary to tuberculosis of some other organ, this is a rare disease, which attacks children between the ages of two and ten years. The disease either goes on to general miliary tuberculosis of the peritoneum or, more frequently, to the formation of an exudate in the peritoneal cavity, with fibrinous adhesions and tuberculous nodules in the stage of partial cheesy degeneration. Primary or secondary tuberculosis of the peritoneal or retroperitoneal and mesenteric glands is sometimes observed in association with tuberculosis of the bronchial glands.

The *symptoms* of tuberculous peritonitis, like those of the simple chronic form, develop slowly and insidiously. Rarely the course is subacute, and the condition then suggests typhoid fever. The child becomes emaciated, pale, and peevish; the appetite fails and the digestion suffers; normal stools alternate with diarrhea. The most conspicuous symptom is the increase in the circumference of the abdomen, and most of the patients complain of colicky pains in the belly and sensitiveness to pressure, especially around the umbilicus. The umbilical folds gradually become obliterated, and there is often a hernial protrusion (Fig. 114). In the course of

weeks or months, as a result of meteorism, retarded peristalsis, or the accumulation of fluid, the abdomen continues to increase in size and becomes more tense and dome-like; the skin is thin and atrophic; movement becomes more and more difficult; elevations of temperature occur, especially in the evening; and there are night-sweats.

The serous, and later seropurulent, and often hemorrhagic, exudate may be free or encapsulated. The demonstration in the abdominal cavity of tumors (varying in size from that of a walnut to that of a hen's egg) by palpation and, if necessary, bimanual examination, has an important bearing on the diagnosis. These tumors consist of fibrinous deposits on the omentum and mesentery, or on the serous surface of the intestine; or they may represent conglomerations of tuberculous glands.

FIG. 114. — Tuberculous peritonitis in a child eight years of age.

Owing to the insufficient absorption of fat the stools are mortary, dry, alkaline in reaction, offensive, and sometimes, especially when there are tuberculous intestinal ulcers, diarrheal, bloody, mucous, or purulent.

The subsequent course of the disease is marked either by exhaustion with the occurrence of edema, especially in the lower extremities, or by the occurrence of other tuberculous complications, which often continue for months and years until the disease finally ends in death.

Not infrequently rupture, either externally at the navel or into the intestine, is observed shortly before the end.

Although in many cases the *prognosis* of the disease is doubtful, a complete cure may be effected under some circumstances by laparotomy, especially in cases of localized tuberculous peritonitis occurring in older children.

Treatment.—Cassel lays down the indications for operative treatment as follows: "If, after several weeks of appropriate general treatment with the customary internal remedies, the febrile state persists, the swelling of the abdomen becomes worse instead of subsiding, and, especially if the emaciation increases instead of diminishing, then, in the absence of grave tuberculous processes elsewhere, the physician should hesitate no longer to entrust his patient to the surgeon's knife, it being quite immaterial what particular form of peritoneal tuberculosis may be supposed to be present."

Unfortunately the high hopes which operative treatment was at first believed to hold out have not been fully realized; for in many of the cases reported as cured a return of the condition or tuberculosis of other organs, especially of the bones, has been observed even after a long course of after-treatment.

The *diet* must be nutritious, easily digestible, and strengthening. Baths containing Iodsalz, Halleiner Mutterlaugensalz, Darkauer Iodbromsalz or sea-salt, and a mountainous or ocean climate may be advised. Internally, intestinal disinfectants, such as creosotal, ichthoform, guaiacol, benzonaphthol, or creosote-cod-liver oil (the latter also in the form of an enema), in doses of 0.5–1.0 gm. to 100 c.c. (7½–15 gr. to 3 fl. oz.), and cod-liver oil (see TUBERCULOSIS), are indicated. Externally the abdomen may be painted once a day with a 6 per cent. solution of iodovasogen, or guaiacol, 1 part to 3 of tincture of iodin. Priessnitz compresses, either the ordinary kind or saturated with iodin-water, may also be tried.

When the abdomen is painted with iodin preparations, especially the tincture of iodin, it is well to paint only one quadrant each day.

The patient should be strongly urged to try the soft-soap treatment. A teaspoonful of some good green soap [soaps containing undissolved particles of caustic potash produce slight cauterization of the skin] is stirred up to form a thick paste with lukewarm water and applied to the abdomen in the evening. One-half hour later the abdomen is carefully washed with lukewarm water or the patient takes a warm

bath. If eczema develops, the back and buttocks may be utilized for the inunction until the eczema heals. Instead of soft soap, tincture of green soap is prescribed by some physicians.

This treatment is not infrequently followed by rapid and complete disappearance of the fluid exudate.

Peritonsillar Abscess. See ABSCESS, PERITONSILLAR.

Perityphlitis. See APPENDICITIS.

Pernicious Progressive Anemia. See ANEMIA, PERNICIOUS PROGRESSIVE.

Perspiration, Excessive. See HYPERIDROSIS.

Pertussis. See WHOOPING-COUGH.

Pes Valgus. See FLATFOOT.

Pfeiffer's Glandular Fever. See GLANDULAR FEVER.

Pharyngeal Tonsil. See ADENOID VEGETATIONS.

Phimosis.—According to a classification suggested by Rubinstein phimosis is either complete—that is, the foreskin cannot be drawn over the glans; more frequently marginal, in which case the foreskin is adherent to the sulcus of the glans; or, finally, partial, the foreskin being adherent to the glans only by a very small piece, which usually lies on each side of the frenulum. The condition is sometimes hereditary and congenital. Depending on the degree of the constriction, it may give rise to a variety of disturbances which lead to mistaken diagnosis and improper treatment. The complete form may prove a serious impediment to micturition, particularly in infants; erection takes place and the urine is passed by drops, evidently with great pain. Sometimes these disturbances in a lesser degree are also observed in the other forms mentioned

above. The bearing down which attends micturition may lead to hydrocele or inguinal or umbilical hernia, and, conversely, treatment of these conditions is useless if the phimosis is allowed to persist. Even in cases of partial phimosis the constant dribbling of urine causes inflammatory irritation of the inner layer of the prepuce, and thus leads to balanitis (*vide*), which in turn increases the interference with the evacuation of the bladder.

If the condition is recognized early and properly treated, the *prognosis* of the phimosis itself and of its sequelæ is often surprisingly favorable.

The most important factor in the *treatment* consists in dilating the narrow foreskin, which in most cases is effected by drawing forward the prepuce and forcibly distending it once or twice with a pair of dressing forceps, and dividing the adhesions with a blunt probe.

The secondary swelling of the prepuce which follows distention and separation of the adhesions requires compresses with liquor Burowi 1 : 4 parts of water, Goulard's solution, or lead acetate. In rare cases, especially in older children and when the prepuce is greatly hypertrophied, this treatment is ineffective and an operation must be advised. Even after operation, however, the symptoms of weakness of the bladder, present in those cases in which changes in the musculature of the viscus have taken place, do not subside for some time.

Phlebitis Umbilicalis. See UMBILICUS, DISEASES OF.

Phlegmonous Angina. See ABSCESS, PERITONSILLAR.

Piles. See HEMORRHOIDS.

Pin-worms. See INTESTINAL PARASITES.

Pityriasis Linguæ. See TONGUE, GEOGRAPHICAL.

Pleurisy.—Pleurisy is rarely primary in childhood, and, when it is, rests on a tuberculous foundation. It is usually

con[illegible]y, the most frequent causes being inflammatory diseases of the pulmonary parenchyma. In most cases pleurisy occurs either as a complication or as a metastatic process in a great variety of infectious diseases. From the pathologic standpoint pleurisy is either dry (pleuritis sicca) or exudative (pleurisy with effusion), with the formation of a serous, serofibrinous, purulent, or, more rarely, hemorrhagic exudate. The purulent form may begin as such or may develop gradually from a serous effusion.

Whether a pleurisy is primary or secondary, whether it is dry or an effusion is present, the most important clinical feature is always pain of the affected side; complete absence of pain is exceptional, but it may be brought out only by pressure on the ribs. Although small children often localize the pain incorrectly—thus, for example, refer it more to the epigastric region—their statements in this respect should nevertheless receive full attention in connection with the clinical examination. The accompanying cough is short, interrupted, and moaning, and, as pleurisy always begins with more or less elevation of temperature, the disease in many respects presents a similarity to the first stage of pneumonia (*vide*). In most cases of the latter, dry pleurisy also develops and the friction-rub or the increasing pain alone may establish the *diagnosis*. Pleurisy with effusion in many cases exhibits a stormy onset like that of pneumonia, or the disease may be subacute, or not so very rarely quite gradual in onset; and if cough and pain are absent the disease may remain latent for some time.

In such a case the temperature is remittent, the variations being often quite slight; it is usually higher at night, and the concomitant *symptoms* consist merely of "stitch in the side" or pain in the chest, dyspnea, and painful cough.

A change in the character of the exudate or reaccumulation of the fluid reveals itself by a considerable rise in the temperature, especially during the evening hours.

Physical examination often establishes the diagnosis beyond a doubt even during the first few days.

The percussion-note over the lowest portion of the affected

side of the thorax is shortened and later dull, while the resistance to the finger is often much increased. Auscultation elicits above the level of the dulness bronchial breathing and increased bronchophony, which are due to compression of the lung; over the dulness itself the respiratory murmur is diminished or completely abolished, tactile fremitus is decreased, and bronchophony lessened or inaudible. A large effusion may be evident on inspection, owing to the change in the breathing and in the configuration of the affected side of the thorax. The respiration on the affected side is more costal, but the thorax is expanded and the intercostal spaces in the lower portions either obliterated or bulging. Depending upon the size of the exudate and whether it is on the right or on the left side, either the liver may be displaced downward or the heart dislocated to the right side; for similar reasons the patient lies either on the back or on the affected side, and a change of position is often followed by violent paroxysms of cough. When the exudate is large there are certain other secondary phenomena, which are explained by insufficiency of the respiration and of the heart action, and consist in increased frequency of the respirations with movements of the nostrils and cyanosis or peripheral edema.

The *course* and *prognosis* of pleurisy vary according to the cause and character of the exudate. Uncomplicated primary or secondary serous or seropurulent exudates often disappear after several weeks or even months and merely leave a thickening of the pleura, manifesting itself by stationary diminished respiration or a friction murmur, and sometimes, owing to contraction, by varying degrees of deformity of the thorax and secondary scoliosis. When the exudate undergoes purulent change (empyema) recovery may take place after surgical intervention or by spontaneous rupture, but in such cases the thickening is very great. On the other hand, empyema may lead to caseation and tubercle formation and become the cause of grave, or even fatal, disease later on.

If the purulent exudate ruptures spontaneously into a bronchus or on the external surface, pneumothorax is produced.

Once the presence of a large quantity of exudate has been definitely ascertained an exploratory puncture should be made under aseptic precautions with a Pravaz syringe, in order to determine the nature of the exudate.

If the exudate is shown to be serous, either by the clinical course or the result of an exploratory puncture, no further active interference is indicated until alarming symptoms develop in the heart or in the lungs; but if puncture reveals a seropurulent or purulent exudate, thoracotomy or puncture with drainage must be resorted to. As a rule, however, the operation should be deferred for from six to eight weeks, because, as has been mentioned, even a purulent exudate may be absorbed. An exception should be made in cases with great elevation of temperature, particularly in the evening, with constantly increasing constitutional disturbances and symptoms referable to the respiratory and circulatory organs. When a large exudate has accumulated rapidly and the constitutional symptoms are grave, and whenever it is impossible after a protracted duration to demonstrate by clinical signs that the exudate has not been absorbed, an exploratory puncture followed by thoracotomy must be performed.

The prognosis and termination of pleurisy are determined by the nature and cause of the exudate. In many cases, especially when the pleurisy accompanies pneumonia, the course is favorable; but under certain circumstances such profound degenerative changes take place in the exudate as to make one fear a fatal termination.

The *treatment* at the beginning of an attack of pleurisy must be directed rather against the advance of the inflammation and the pain to which it gives rise than against the fever. For this purpose one may prescribe cold compresses or an ice-bag or Leiter's coils to the chest; sometimes a Priessnitz compress, renewed every hour, suffices. The pain is controlled by rubbing in liniments, such as oil of hyoscyamus with either olive oil or chloroform, equal parts, 5 to 10 per cent. menthol, soap liniment, rectified spirit of wine or chloroform, camphor-vasogen, or the following chloral-camphor ointment:

℞	Chloral hydrat.,	1.0 (gr. xv);
	Camphor,	0.3 (gr. v);
	Vaselini,	30.0 (℥i).—M.

In addition, the skin should be painted daily with chloroform and then covered with gutta-percha paper. If the child is not anemic, cups or leeches (from 3 to 6) or a mustard-poultice or mustard-plaster may be applied with good results to relieve the pain.

Internally the salicylates, such as sodium salicylate or aspirin, are useful; but the dose must be gauged to produce sweating—that is to say, older children should receive from 2 to 3 gm. (30–45 gr.) of sodium salicylate, or 1–2½ gm. (15 to 37 gr.) of aspirin per diem. Diaphoretic teas (linden- or elder-flowers) and hot baths at 37° to 40° C. (98.3°–104° F.) of a half-hour's duration, followed by a dry pack, also have a good effect.

If an exudate is present and the inflammatory symptoms have subsided, remedies to encourage absorption and diuresis are indicated. Mild laxatives are prescribed for a few days, especially calomel 0.01–0.025 to 0.05 gm. (⅙–⅜ to ¾ gr.), two or three times a day; if the stools become too frequent, the drug is at once discontinued. To promote diuresis, potassium acetate or solution of potassium acetate, 2–5 gm. to 100 c.c. (30–75 gr. to 3 fl. oz.); diuretin, 1 to 3 gm. (15–45 gr.) per diem; agurin in the same dose; caffein 0.10 to 0.50 gm. (1½–8 gr.) per diem; or sodium iodid, 1 to 2 per cent., may be given.

This medication is supplemented by Priessnitz compresses or compresses wrung out of Haller or Darkauer Iodwasser (iodin water) and changed at long intervals; inunctions with a 2 per cent. ointment of sodium iodid, or the application of iodin- or ichthyol-vasogen or of iodoform collodion, 1 : 9.

Absorption can also be greatly hastened by ordering a suitable *diet*. In the beginning it should consist of milk, with or without the addition of some other beverage (such as tea, coffee, etc.), nourishing soups, eggs, dishes prepared with milk, and, as the fever subsides and the appetite increases, light meat dishes. But in order to utilize the diet as a means of hastening absorption and to raise the osmotic pressure of

the blood, food rich in albumin with an excess of common salt is administered and the ingestion of fluids is restricted, except milk, of which the patient is allowed to take as much as he pleases. Other therapeutic aids are found in sweat baths, hot-air baths, cabinet vapor baths, and later steam-baths or Irish-Roman baths, brine- or salt-baths.

Even in uncomplicated cases the patient must be kept in bed until the exudate is practically absorbed.

In those cases in which the course does not run smoothly, owing on the one hand to the quantity of the exudate, and on the other to its purulent character and the secondary symptoms, the question of operative intervention becomes urgent. In any case, however, the nature of the exudate must at first be determined by an exploratory puncture.

The choice of methods for opening the thorax should be left to the operator; other things being equal, thoracotomy with or without resection of one or more ribs should be preferred in the case of children.

During the *course* of the disease the appearance of complications in the respiratory organs calls for oxygen inhalations; cardiac weakness is combated with digitalis and caffein; and during the stage of convalescence iron, cod-liver oil, or creosote preparations must be prescribed. To correct the deformity of the affected half of the thorax, caused by partial contraction of the lung and of the thickened pleura, with secondary scoliosis, pulmonary or other gymnastics, or a course of treatment in the pneumatic chamber, should be advised. If no more active measures are employed, the child must at least be made several times a day to lie on the healthy side in order to bring about expansion of the compressed lung, or be made to take thirty long, deep respirations with the arms raised above the head. Whenever it is feasible, the convalescent should be sent to the country or into the mountains, and later should be advised to take sea- or brine-baths.

Plexus Paralysis. See PARALYSIS, PLEXUS (DUCHENNE-ERB'S).

Pneumonia, Croupous (*Lobar Pneumonia*).—Since the *cause* of this disease has been definitely proved to be a specific micro-organism, namely, the diplococcus pneumoniæ of Weichselbaum or the pneumonia bacillus of Friedländer, croupous pneumonia must be included among the infectious diseases.

Numerous cases of the disease are sometimes encountered in the same district at certain seasons of the year, especially among older children. The same *pathologic changes* as in adults—that is to say, the stage of inflammation, red hepatization, and the third stage or gray hepatization—are present and can be demonstrated by physical examination.

Like other infectious diseases, lobar pneumonia sets in suddenly, sometimes with vomiting, chill, or even with convulsions. The fever is high from the start, and during its entire course presents the type of a continued fever with slight morning remissions and, finally, fall by crisis.

With the fever appear increased frequency of the respirations and a short cough, which is often suppressed on account of the pain. Characteristic sputa are rarely obtained, except in older children. In the beginning they are bloody and often of a reddish-brown color, as in the case of adults. The respirations are superficial, and after a few days a diminution of the breath-sounds is noticed over one or the other side of the thorax. As the pleura becomes involved, the pain increases and the respirations become even more superficial, short and moaning.

When the pneumonic infiltration is extensive and interferes with oxygenation, pallor and even cyanosis of the face and mucous membranes develop. Sometimes the skin of the cheek is hyperemic or cyanotic on the side corresponding to the affected lung. Herpetic lesions occasionally appear on the face, especially about the lips. The general condition is greatly disturbed; the patient on mere inspection presents the picture of severe illness, and there are somnolence and flightiness. The mucous membranes and the tongue are dry, and later become covered with sordes; thirst is enormously increased; the urine is diminished in quantity and contains

large quantities of uric acid, sometimes with a trace of albumin; the spleen is occasionally enlarged.

Depending on the distribution and extent of the pneumonic process, percussion reveals over one, or more rarely over both lungs, usually over the lower lobes, but sometimes also at the apex, at first slight tympany and later dulness. In some cases the dulness is present from the start, in others not until several days after the beginning of the disease. When the pleura is involved and effusion is present, dulness with increased resistance is obtained with a tympanic element in the percussion note in the region surrounding the inflammatory focus. On auscultation, at first in different areas, mixed mucous râles and sometimes crepitant râles are heard, and as the infiltration increases the breath-sounds become loud and bronchial. At this stage vocal resonance is also increased, and this sign alone sometimes makes the diagnosis possible.

The *course* of a true lobar pneumonia is in most cases benign; improvement manifests itself by the gradual subsidence of the constitutional symptoms and physical signs. The temperature falls by crisis on the second, seventh or ninth day, or sometimes after a duration of weeks; in some cases the fever may end by lysis, and an evening rise of temperature may persist for some time, or subnormal temperatures may be observed in some cases. The breathing becomes quieter, the cough softer and more infrequent, the quantity of urine increases, and the child sometimes breaks out in profuse perspiration the first time it falls into a deep sleep.

On the other hand, the course is often very much disturbed by *complications*. Among these the most important is pleurisy with the formation of a serous or purulent exudate. The disturbances caused by this complication manifest themselves by increased pain in the affected side as well as by other symptoms which have been discussed in connection with Pleurisy (*vide*). In rare cases icterus and singultus appear as complications.

In addition there are various alterations in the pneumonic focus itself, which manifest themselves by non-appearance of the signs of resolution and persistence or return of the fever,

and may lead to induration, caseation, gangrene or abscess formation.

Disease of the middle ear is not an infrequent complication of lobar pneumonia; involvement of the peri- or endo-cardium is more rare; while nephritis is not infrequently present at the same time.

A peculiar form of lobar pneumonia, which is not so very rare in young children, is localized in the apices of the lungs, and the cephalic symptoms are so prominent that it has been given the name of **cerebral pneumonia.** The meningeal symptoms consist in protracted spasms, delirium, and profound disturbance of consciousness, which cannot alone be explained by the temperature, although the latter is often abnormally high. In addition, a number of other symptoms are also present, such as headache, hyperesthesia of the skin, masticating movements, and grinding of the teeth; the child cries out wildly and is constantly starting in sudden fright. Vomiting and diarrhea or obstinate constipation are also present. This primary form of pneumonia, which usually ends favorably, must, however, be carefully distinguished from purulent meningitis, which is a severe complication of pneumonia and is caused by secondary infection occurring during the course of the disease.

Sometimes the infiltration is confined to the central portion of the lobe and the peripheral tissue escapes (central pneumonia), so that on percussion only indistinct dulness or sometimes a tympanic sound is elicited. In wandering pneumonia the infiltration spreads to other lobes of the lungs, and renewed exacerbations of the fever take place.

Uncomplicated cases of primary croupous pneumonia usually run a favorable course because of the vigor of the heart in childhood, but the *prognosis* depends greatly on the previous condition of health, and on the age of the individual affected. In repeated attacks of pneumonia, and pneumonia occurring secondarily in the course of some other disease, especially measles, croup, and typhoid fever, the prognosis is, in many cases, doubtful, and sometimes fatal.

Treatment.—The two important indications which must

be considered in the treatment of pneumonia are to combat the fever and maintain the strength of the heart. The first indication is met by means of various hydrotherapeutic procedures, the value of which is now well established.

The patient's body is completely wrapped in moist linen cloths well wrung out of cold water and applied in such a way as completely to envelop not only the trunk but also each of the legs separately. Depending on the height of the fever, the pack is changed every ten to twenty minutes, which, by this method, can be readily and rapidly done without raising the patient. As soon as the temperature diminishes, the pack is allowed to remain in place until the fever begins to rise again. In the case of vigorous patients a wet pack to the trunk alone is sufficient. When the temperature begins to subside, the trunk compress may be left in place for a longer time, and if chilliness develops it must be discontinued altogether. When there is much pain in the affected half of the thorax, this part of the chest should be rubbed before applying the compress with a mixture of menthol and chloroform or alcohol in the proportion of 1 : 5, or with a liniment consisting of equal parts of chloroform and oil of hyoscyamus.

The bath treatment is unnecessary in most cases of croupous pneumonia; it is indicated, however, in the presence of marked cerebral symptoms, and in those protracted cases in which respiratory insufficiency becomes prominent, but without special weakness of the heart.

Lukewarm tub-baths at 26° to 24° R. (90.5° to 86° F.) are then ordered, with cool affusions to the thorax and to the nape of the neck. As soon as signs of heart weakness make their appearance both baths and wet packs must be discontinued.

So long as the pulse is strong it is unnecessary to give any tonics; but as soon as a change in the pulse or cyanosis is noticed one of the following remedies should be freely employed: infusion of digitalis, made from 0.20–0.30 gm. to 80 c.c. (3–4½ gr. to 2½ fl. oz.); sodium benzoate, 1.5 gm. to 60 c.c. (22 gr. to 2 fl. oz.). Camphor, either internally in the

form of powdered camphor 0.20 gm. to 80 c.c. (3 gr. to 2½ fl. oz.), or hypodermatic injections of camphorated oil; aromatic spirit of ammonia, 10–20 drops to 70 c.c. (2⅓ fl. oz.) of water, one teaspoonful or dessertspoonful every half-hour or hour; or acetic ether in the same strength and dose, or 2 or 3 drops in a dessertspoonful of water every quarter- or half-hour; or caffein 1–1.5 gm. to 60 c.c. (15–22 gr. to 2 fl. oz.) of water; or wine, champagne, cognac, hot black coffee or tea.

Internal medication must be reinforced by keeping the room well aired, and, if necessary, administering oxygen by inhalation, 2 to 3 liters (quarts) every half-hour or hour, and by various procedures to stimulate the skin (see LOBULAR PNEUMONIA). Sometimes it becomes necessary to stimulate the peripheral circulation by means of hot packs (hot-water bottles, thermophores) and by rubbing the cold extremities.

When the course of the disease is ideal, from a clinical standpoint, very little is necessary except wet packs. On account of the cough and pain, narcotics must be used, such as extract of opium, morphin, codein, dionin, 0.005 to 0.01 gm. (1/13–1/7 gr.) of each of these to the dose, or heroin, 0.0025 gm. (1/27 gr.) to the dose, and, later, peronin, which acts more like an expectorant (also in the dose of 0.005 to 0.01 gm.—1/13–1/7 gr.). [The doses here given seem unnecessarily large, even for older children.—ED.] As soon as signs of resolution are noted milder expectorants, such as infusion of ipecac 0.20–0.30 gm. to 70 c.c (3–5 gr. to 2½ fl. oz.); ammonium carbonate, 0.5–1 gm. to 70 c.c. (8–15 gr. to 2½ fl. oz.); or infusion of senega leaves, 5 gm. to 80 or 100 c.c. (75 gr. to 2½–3 fl. oz.) are prescribed.

Occasionally, when the patient is vigorous and the heart is sound, the antipyretic preparations may be used to bring down the temperature. Antipyrin or salipyrin 0.05 gm. (¾ gr.) for each year of the age, one powder every one or two hours until the fever diminishes; quinin 0.3–1 gm. (4½–15 gr.) per day or in the form of an enema or suppository; or aspirin in the same dose, especially in the presence of pleuritic pain. [The general consensus of opinion among American physicians is against the use of coal-tar antipyretics in

pneumonia. The drugs here mentioned are perhaps the safest of their class, but they should be used in minimum doses and only under exceptional conditions in the class of cases mentioned.—ED.]

Recently the administration of creosotal in large doses has been warmly recommended. The doses are as follows:

Up to the first year . . . . . 0.25–1 gm. (4–15 gr.);
" " fourth " . . . . . 1.00–3 " (15–45 gr.);
" " sixth " . . . . . 3.00–4 " (45 gr. to 1 dr.);
" " tenth " . . . . . 4.00–5 " (1 dr. to 75 gr.);

administered in emulsion of sweet almonds 40 c.c. (10 fl. dr.) and syrup of ipecac 25 c.c. (6 fl. dr.), or in a mucilaginous mixture or in warm milk, a teaspoonful to a dessertspoonful every hour.

When there are violent headache and delirium, and especially in cerebral pneumonia, ice-compresses or an ice-bag must be applied to the head, and the bowels freely emptied. The complications of croupous pneumonia require the appropriate treatment, which will be found under their respective headings.

During the entire course of the disease the *diet* must be restricted. Cold water with or without fruit-juice or some still mineral water should be given as often as possible; in addition, milk and cocoa, malt- or bean-coffee, strong bouillon, and, if necessary, wine or cognac. As soon as improvement begins, a carefully selected and easily digestible liquid or semiliquid diet is called for, and may include the following articles: thick soups, eggs, *chaudeau*, biscuits (crackers), dishes prepared with milk, milk purée; later, chopped light or dark meat, or meat in the form of meat-juice or Wellcome's, Baker's, or Brand's essences.

The patient must not be allowed to get up until the last sign of disease has disappeared from the lungs and the strength has improved, and at first only for a little while at a time.

If convalescence does not proceed rapidly, the patient should if possible be sent to the country or to a warm cli-

mate until complete recovery. In order to guard against relapses as much as possible, hydrotherapeutic procedures to harden the body should be advised. (See HARDENING.)

Pneumonia, Lobar. See PNEUMONIA, CROUPOUS.

Pneumonia, Lobular or Catarrhal.—Catarrhal bronchitis or bronchiolitis, from a pathologic standpoint, usually represents the transition to a lobular pneumonia; hence the same primary and secondary *causes* obtain for this disease as have been mentioned for capillary bronchitis. (See BRONCHITIS, CAPILLARY, or BRONCHIOLITIS.)

The catarrhal inflammation of the bronchial mucous membrane and the obstruction of the bronchial tube by the accumulated secretions produce a circumscribed atelectasis of the pulmonary parenchyma, within which circumscribed inflammatory foci develop under the action of various infectious germs.

These foci are found scattered through the lung tissue on both sides, but chiefly in the less active lower lobes, especially in the regions immediately adjoining the vertebral column, and in the apices. By coalescence of adjacent foci larger and more extensive pneumonic infiltrations may be produced.

Catarrhal pneumonia occurs chiefly in children up to the second year of life, and, like capillary bronchitis, is one of the most dangerous diseases of this period.

The *symptom-complex* is almost absolutely identical with that of bronchiolitis even as regards the physical signs, and at the beginning of the disease, before extensive infiltrations have taken place in the lungs, it is practically impossible to make the *diagnosis* of lobular pneumonia. But as soon as the foci increase in size and the consolidation becomes more extensive, a change in the percussion-note is found in circumscribed portions of the lungs, and chiefly, as has been mentioned, over the lower lobes or at the apices. At first the percussion-note is more tympanitic; later it becomes dull, and sometimes crepitant râles and bronchial breathing

are present. But only too often the bronchial breathing is masked by the loud mucous râles of the bronchitis, and in such cases the diagnosis must be made by the local increase in vocal resonance or the persistent localization of the finest vesicular râles.

As other regions of the lungs become infiltrated the temperature rises, the respirations increase in frequency, and a marked change for the worse is observed in the general condition.

The *course* of catarrhal pneumonia varies, and depends in many cases on the causal factors, the former state of health, the age, and the hygienic surroundings of the individual. In favorable cases the fever diminishes in about two weeks, just as in capillary bronchitis, the respirations become less frequent, and there is only slight, painless cough, with an evident improvement in the general condition. Gradually, although more slowly, the dulness disappears, and the râles become less numerous but do not disappear altogether for several weeks after improvement has begun. In other cases the duration is longer, but the disease nevertheless ends in recovery, although convalescence is very slow and interrupted by repeated relapses. In weakly, rachitic children, and after whooping-cough or measles, the disease runs a more chronic course with subacute exacerbations, and either ends fatally after a duration of months or leads to other grave complications in the lungs. Other cases, however, particularly those due to some septic cause, never exhibit any improvement in the morbid symptoms. The heart becomes steadily weaker, the respirations and pulse more rapid and feeble; the cyanosis of the mucous membranes steadily increases; the peripheral portions of the body become cold, cyanotic, and edematous; and death is ushered in by convulsions.

From what has been said it follows that the *prognosis* in catarrhal pneumonia is always grave, and even after the acute phenomena have subsided many things may occur to render an originally favorable prognosis doubtful.

Treatment.—In lobular pneumonia the chief indications, from a therapeutic standpoint, are to promote expectoration

as much as possible; to bring down the fever; to prevent the formation of atelectasis by the laborious and tedious process of carrying the child about and constantly changing its position, and by frequently renewing the air in the room; and to support the heart.

Hydrotherapeutic procedures are especially valuable in this disease. In addition to wet-packs, changed every half-hour or hour, warm baths (30–32° R.—99.5–104° F.), with or without mustard flour and with cold affusions, are also available. The employment of a single mustard-pack may also be referred to once more in this connection. (See BRONCHITIS, CAPILLARY.) These derivative procedures afford the best means of bringing about resolution of the pneumonic infiltrate, promoting expectoration, improving the strength of the heart, and stimulating diuresis. The medical treatment is exactly the same as in acute or capillary bronchitis.

In the presence of asphyctic conditions and cyanosis, inhalations of oxygen, 2 to 5 L. (quarts) every one or two hours, should be ordered.

During convalescence it is well to send the patient to a wooded region; the *diet* should be adapted to the child's age, and, if necessary, iron or cod-liver oil preparations may be prescribed.

Pneumothorax.—The entrance of air into the thoracic space may be the result of external violence or of perforation of the pleura from the lung through rupture of a tuberculous or bronchiectatic cavity. It also occurs as a result of perforation of bronchial glands or of a pulmonary abscess, or rupture of an empyema into a bronchus, and is followed after a short time by secondary sero- or pyo-pneumothorax.

Corresponding to the mode of production, in total pneumothorax the *symptoms* set in suddenly, the most prominent being dyspnea with increasing cyanosis and a weak pulse. On auscultation the respiratory sounds are found to be weakened or entirely abolished. In the erect position, metallic, ringing sounds and metallic râles or bronchial breathing may be heard. The percussion-note may be dull or hyperresonant

—so-called "box-tone"—tympanic or metallic, and the character of the sound, as well as the boundaries of the dulness, changes with the position of the body. Moderate shaking of the patient produces a splashing noise, and, if the air is under high tension, the sound is metallic. Owing to the collection of air and fluid, secondary changes in the position of the heart and of the liver, depression of the diaphragm, and dilatation of the diseased half of the thorax are superadded.

In cases of encapsulated pneumothorax, as in pneumothorax from rupture of an empyema, the above-mentioned symptoms develop gradually.

The *prognosis* is uncertain, as appears at once from the causes of the condition.

Treatment.—When pneumothorax occurs suddenly treatment must be directed immediately against the collapse; hence stimulants, such as aromatic spirit of ammonia or acetic ether, wine, cognac, or champagne, in doses up to a teaspoonful, and inhalations of oxygen, must be employed. The pain and dyspnea which are occasionally present may be relieved by means of ice-compresses and narcotics. Depending on the patient's age, opium preparations, morphin, or codein, in the doses mentioned under the heading of BRONCHITIS, may be administered.

When, owing to the increase in the quantity of the exudate, secondary phenomena appear elsewhere, operation is indicated, at first by simple puncture, and, if this does not suffice, by siphon drainage (Bülau) or thoracotomy.

In addition to these therapeutic measures complete rest must be insisted upon, and the patient must not be allowed to talk. The *diet* should be as nutritious as possible, easily digestible, and given in small quantities at a time.

Poisoning.—Poisoning accidents are usually the result of gross neglect in looking after the child or criminal carelessness in keeping poisons of various kinds used either for household or for therapeutic purposes. To satisfy their thirst or a craving for sweets children thus find an opportunity

either to taste of the poison or sometimes to ingest large quantities. Poisoning with so-called essence of lye and sulphuric acid are most common. The former particularly, somewhat diluted, is obtainable in the retail trade.

The secondary symptoms of poisoning, which occur suddenly, depend chiefly on the quantity of fluid that has been taken into the mouth or swallowed. Thus in poisoning with essence of lye the mucous membrane of the lips, tongue, mouth, and pharynx is red and swollen; in poisoning with hydrochloric, nitric, or sulphuric acid it is brown, or even black and wrinkled. If a small quantity of the poison enters the esophagus and stomach, the swelling and cauterization of the mucous membrane produce the same pathologic changes in these structures, and lead to severe dysphagia and gastro-enteritis, and the vomiting of mucous, bloody, or chocolate-colored material which may have an alkaline or acid reaction. Although moderate burns and excoriations heal completely after a variable length of time and merely leave a scar in the mucous membrane, if these scars are situated in the pharynx or esophagus their ultimate results may be of the gravest significance. The cicatricial tissue in these cases causes stricture of the esophagus, the severity of which varies with its extent.

The *prognosis* in a case of poisoning depends on the quantity of poison that has been swallowed and on the secondary phenomena.

Treatment.—In cases of poisoning with sulphuric, nitric, concentrated acetic, or carbolic acid, lavage should never be resorted to, on account of the danger of causing severe lacerations of the mucous membrane. Milk, oil, albumin-water, sodium bicarbonate, burned magnesium, etc., should be administered.

In cases of poisoning with lye, neutralizing acids such as citric, acetic, or dilute hydrochloric acid must be administered with the least possible loss of time.

Stricture of the esophagus, which manifests itself by a constantly increasing difficulty in swallowing, must not be subjected to a course of dilatation with sounds until three

weeks have elapsed. If no food at all can be taken by the mouth, nothing remains but a surgical intervention in the form of a gastrostomy. Even after the mildest burn the patient must be kept for weeks on a cold liquid diet, which may need to be supplemented by the administration of nutritive enemas.

Phosphorus- and belladonna-poisoning should be briefly mentioned in this connection. In phosphorus-poisoning the vomited material has a garlicky odor and is luminous in the dark; there is great lassitude. The antidote is a pale violet solution of potassium permanganate or a tablespoonful of rectified oil of turpentine. Vomiting should be induced artificially and lavage performed at once; milk, oil, and fats should not be administered. Belladonna-poisoning occurs in children from eating the berries of the deadly nightshade. Redness of the face and of the entire surface of the body, thirst, mental exhilaration, excitement, or even mania, and dryness of the mouth and throat, with the characteristic pupillary dilatation, make up the symptomatology. Artificial emesis, cold affusions, tannin, black coffee and tea, etc., are the most important therapeutic measures to be employed.

Brief mention may also be made of poisoned wounds from the bites of insects and mad dogs. A ligature should be applied around the affected extremity to the central side of the wound and the poison removed by cauterizing with a red-hot nail or burning cigar, or, best of all, a Paquelin cautery. Patients who have been bitten by a mad dog should be sent to a public institution for the treatment of rabies.

Poliomyelitis. See PARALYSIS, SPINAL.

Polydactylism (*Supernumerary Digits*).—Analogous to partial or total adhesions, rudimentary and often symmetric malformation or reduplication of individual fingers and toes sometimes occurs, usually of the thumb or fifth finger, the attachment of the supernumerary member being either articular or merely cutaneous. These deformities all require a plastic surgical operation (Fig. 115).

Polyphagia. See BULIMIA.

Polypi, Rectal. See RECTAL POLYPI.

Porrigo. See CRUSTA LACTEA.

Pott's Disease. See SPONDYLITIS TUBERCULOSA.

Precocious Menstruation. See MENSTRUATION, PRECOCIOUS.

Prematurity. See DEBILITAS VITÆ.

Prepuce, Epithelial Adhesion of.—This condition is usually congenital, but may follow balanitis. In a child it produces symptoms almost identical with those observed in phimosis, except that they are less intense. An especially common symptom is painful bearing-down and crying before micturition.

FIG. 115.—Polydactylism.

When the adhesions are thin the foreskin can be drawn back over the glans by exerting a little force and without causing more than a moderate amount of pain; sometimes it is necessary to free them mechanically with the aid of a probe, an operation attended by slight hemorrhage. The masses of smegma that have accumulated in the corona must be carefully removed by washing with boric acid solution, or, better, with a 5 per cent. solution of borated liquid vaselin, after which the foreskin is again drawn over the glans. The inflammation which follows separation of the adhesions is temporary and may be treated with compresses of dilute Burow's solution, 1 : 4 parts of water, or with lead acetate solution.

In order to prevent the divided adhesions from forming

again the foreskin must be drawn back at least twice a week, and the head of the penis carefully cleansed and well dusted with a disinfecting powder.

Prickly Heat. See MILIARIA.

Prolapse of Anus and Rectum.—Partial prolapse with protrusion of the rectal mucous membrane, or complete prolapse of varying degrees going on to invagination of the rectum, is comparatively frequent in children.

The first form frequently occurs in marasmic children and in sufferers from chronic intestinal catarrh; for the tenesmus which accompanies colitis is an important factor in the production of rectal prolapse. In addition to tenesmus all other conditions in which the pressure on the abdominal organs is increased, such as phimosis, chronic constipation, vesical calculi, and whooping-cough, must be mentioned as possible etiologic factors.

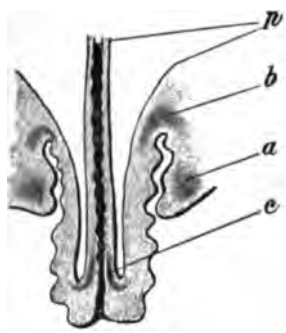


FIG. 116.—Diagrammatic drawing of prolapse of the rectum. *p*, Peritoneum; *a*, external sphincter; *b*, internal sphincter; *c*, sphincter tertius.

Prolapse of the rectum occurs most frequently during defecation or during a violent paroxysm of whooping-cough. Although it is always possible to replace the intestine, the prolapse recurs with every defecation or paroxysm of cough. There is seen at the anal opening a lip-shaped, circular protrusion of the mucous membrane, which is swollen and red and bleeds readily (**prolapsus ani**), or a sausage-shaped tumor of varying length is seen depending from the anus, which is the totally or partially prolapsed rectum (**prolapsus recti**) (Figs. 116, 117).

The *prognosis* of a small rectal prolapse of accidental occurrence is usually favorable; but when the prolapse is large, and especially in atrophic marasmic children, it is often unfavorable if only on account of the hemorrhage from the

prolapsed mucous membrane, which often requires a long course of treatment with doubtful result.

Treatment.—The first indication is to replace the prolapsed mucous membrane, and the second to prevent the recurrence of the prolapse. The prolapse is replaced as follows: With the patient in the knee-elbow position a piece of linen or absorbent gauze covered with borated vaselin or dipped in oil is laid on the prolapsed bowel, the finger introduced, and the mucous membrane gradually forced back. Sometimes it is

FIG. 117.—Prolapse of the rectum in a girl four years of age. Spontaneous recovery after correction of the intestinal catarrh.

impossible to replace a prolapse without a slight degree of anesthesia.

In order to keep the mucous membrane in place various procedures have been suggested, among which the most promising are of a surgical nature. The latter consists either in wearing a bandage, the excision of spindle-shaped strips from the radiating folds of skin that converge at the anal opening, or cauterization of the skin surrounding the anus in radiating lines with the Paquelin cautery. In old cases of rectal prolapse Karewski recommends paraffin injections [hard paraffin with a melting-point of 56° to 58° C. (132⅘–136⅖° F.)]. After the bowels have been thoroughly evacuated by giving

laxatives for two days, from 1 to 2 gm. (15–30 gr.) of bismuth are given on the afternoon of the third day to quiet the bowel.

After the operative field has been disinfected the prolapse is replaced and, under the guidance of the finger introduced into the rectum, a ring of hard paraffin is made above the anus, between the external skin and the mucous membrane, beginning at the point where the needle is inserted. During the succeeding twenty-four hours defecation is prevented by the administration of bismuth subnitrate and a suitable diet.

In simple recurring cases of rectal prolapse an excellent plan is to cauterize the border of the anal mucous membrane either with the solid stick or with a thermocautery at intervals of five days.

Symptomatically the etiologic causes of prolapse of the rectum must be taken into account by applying the appropriate treatment.

In order to prevent a recurrence of the prolapse after it has been replaced, a dressing consisting of a pad of cotton or of absorbent gauze, held in place with a T-bandage, can be used, or strips of adhesive plaster may be laid across the anal fold in imbricated fashion like the tiles on a roof. These strips of adhesive plaster compress the buttocks, and in order to make defecation possible are perforated in the anal region. Hypodermatic injections of strychnin sulphate, 0.01 gm. to 10 c.c. ($\frac{1}{7}$ gr. to $2\frac{1}{2}$ fl. dr.) of water given once or twice a day, or injections of ergotin [ergotin 0.5 gm. ($7\frac{1}{2}$ gr.), glycerin and distilled water, of each 15 c.c. ($\frac{1}{2}$ fl. oz.)], to be injected close to the rectum, are also employed, although it must be confessed that the result is uncertain. [The doses of strychnin sulphate and ergotin here given are exactly in accordance with the original German test, but they are so large that it seems likely that a typographical error must have been made in the position of the decimal point. Even a hypodermatic dose of $\frac{1}{70}$ grain of strychnin sulphate is too large for a child of ten years in ordinary conditions of health.—Ed.]

Dr. Hajech recommends a new mode of treatment: A conical piece of ice, pared into shape with a knife and moulded with the hand, is wrapped in aseptic gauze and the

apex of the cone placed on the centre of the prolapse. (For a child between four and five years of age the ice-suppository should be 7 or 8 centimeters long and 2½ or 3 centimeters at the base.) The suppository is then pushed up into the bowel along with the prolapsed rectum until both have disappeared from view. There is no need to apply a dressing; the child must lie quietly, for a short time after the ice-suppository has been introduced, in the lateral position, with the buttocks firmly compressed. If the condition recurs, the same procedure is repeated until the prolapse disappears permanently. The ice-suppository acts as a stimulus to the muscular action of the intestine, and, by diminishing sensibility, relieves the tenesmus and stimulates circulation in the diseased mucous membranes by raising the vascular tone.

Astringent enemas containing tannin, alum, or oak-bark decoctions have also been recommended; but if these are used it is necessary to make sure that the patient has a soft stool every day. It is very important at each defecation to see that the child is unable to brace its feet against the floor during the act; it must sit on the commode in such a way that the legs hang free, as in that position it is unable to develop much strength in bearing down.

Prurigo.—Prurigo is usually an incurable disease, characterized by an eruption of small nodules about the size of the head of a pin, at first pale and later becoming inflamed, and appearing chiefly on the extensor surfaces of the extremities, on the buttocks, and very rarely on the trunk; the joints usually escape. During the initial stages of prurigo, lesions resembling urticarial wheals or the disease known as strophulus (*vide*) develop, and the characteristic pruriginous cutaneous eruptions appear later. Owing to the intense itching the prurigo nodules are scratched off and secondary eczematous eruptions and exudations appear on the brown, pigmented skin, which becomes hard and thick and sometimes edematous, as in elephantiasis.

The secondary infection from the scratching often causes great swelling of the lymph glands (prurigo-buboes). The

severer the disease and the shorter the intervals of freedom, which occur chiefly during the milder seasons of the year, the greater the patient's distress and the more marked the effect on the health and strength. The interference with cutaneous perspiration, the loss of sleep, and the great mental depression which soon develops undermine the patient's strength and diminish his powers of resistance.

Accordingly the *treatment* must be directed chiefly to improving the patient's strength, both by giving a nourishing diet and by the administration of iron and arsenic preparations, cod-liver oil, or malt foods. To relieve the itching, antipyrin, phenacetin, or even bromin, chloral, or trional may be given. A protracted warm bath every evening, containing potassium sulphite (40 gm.—10 dr.—to the bath) or two teaspoonfuls of Vleminckx's solution, followed by sweating or ablutions with Herba- or Nicotiana-soap, appears to exert a favorable influence on the eruption.

Every fourth or fifth day the skin should be anointed twice a day with Wilkinson's ointment, a 10 per cent. epicarin or 2 to 3 per cent. betanaphthol ointment; or the skin may be painted with liquid thiol, balsam of Peru, and glycerin, equal parts of each. At the end of such a course of treatment the patient takes a hot bath, after first thoroughly soaping the body, and then resumes the inunction treatment. A nightly wet pack with cloths wrung out of a salicylic acid solution (1 teaspoonful to 1 liter of water) is also effective when there is much infiltration of the skin.

In order to induce sweating and to moisten the dry skin subcutaneous injections of pilocarpin muriate, 0.001 to 0.01 gm. ($\frac{1}{70}$—$\frac{1}{7}$ gr.) per diem, and a teaspoonful of syrup of jaborandi once or twice a day, have been recommended.

Prurigo Infantum. See STROPHULUS.

Pseudocroup. See LARYNGITIS, ACUTE, and SUBCHORDALIS.

Pseudohermaphroditism. See HERMAPHRODITISM.

Pseudohypertrophic Paralysis. See PARALYSIS, PSEUDO-HYPERTROPHIC.

Pseudoleukemia (*Hodgkin's Disease*).—This disease is more frequent in children than leukemia and, like the latter, is due to some unknown *cause*. With the picture of progressive anemia and its alarming sequelæ enormous enlargement of the lymph glands occurs, beginning in the neck. The liver and spleen are enlarged and the swollen mesenteric glands can be felt.

The *blood-picture* shows a diminution in the hemoglobin and in the tint and number of red blood-cells, thus producing a relative increase of the lymphocytes and mononuclear forms.

The *course* of pseudoleukemia is protracted and the disease in most cases terminates fatally from cachexia and some other intercurrent disease.

The *treatment* should have for its principal object to correct the anemia by improving the conditions of the patient's life, both as regards dwelling and food. Internally, arsenical preparations are given and are sometimes followed by distinctly good results. The drug may be given in the form of mineral waters containing arsenic and iron, such as Guber, Levico, and Roncegno, 1 to 2 teaspoonfuls to a tablespoonful in twice the quantity of water once a day, after food; or in the form of Fowler's solution in ascending doses, 1 to 10 drops in water twice a day, after the midday and evening meals.

Parenchymatous or hypodermatic injections of Fowler's solution, or Pearson's solution of arseniate of soda, and distilled water, equal parts of each, 2 to 5 drops, sometimes prove a valuable aid to the internal medication. Excessively enlarged lymphomata should be removed with the knife as soon as possible.

Psoriasis.—This disease occurs rarely in young children, usually between the fifth and sixth years of life, and nowise differs in localization and general appearance from psoriasis in adults. The eruption, which may take one of a

variety of forms, such as **psoriasis punctata, guttata, nummularis, figurata, annularis,** or **gyrata,** preferably occupies the extensor surfaces of the extremities, especially the joints, but is also found scattered over the trunk and even on the face.

The general health is but little disturbed by itching; sometimes fissures develop at the joints and interfere with the movements of the extremities. Eczema may occur secondarily from the scratching.

In most cases of psoriasis a favorable *prognosis* can be given; but the patient must be kept under constant observation, and every new psoriatic patch at once must be subjected to *treatment.* The latter includes both internal and external measures. Internal medication consists in the exhibition of Fowler's solution and water of cinnamon, equal parts, from 2–20 to 30 drops a day in ascending doses; potassium iodid, also in ascending doses, the heart and body-weight being carefully watched; tablets of thyroid extract or iodothyrin, 0.25 gm. (4 gr.) to the dose. External treatment has for its chief object to soften the epidermal scales by the application of soft soap, oil, ointments, and emollient baths. After the scales have been removed, one of the following remedies may be applied: tar preparations, such as oil of birch-tar, tar, or oil of cade, mixed with equal parts of olive oil, or one of the following tar ointments:

℞ Picis liquid.,
Lanolin, aa 25 (℥j);

Or,

℞ l. rusci, 20 (℥v);
Sapon. viridis, 5 (gr. lxxv);
Lanolin, 75 (℥ijss);

or 10 to 20 per cent. tar ointment with unguentum caseini and the addition of one part of green soap to four parts of tar; or thigenol and glycerin, equal parts of each, which is to be applied twice a day and the part covered with cotton.

Chrysarobin is prescribed in the form of a 5 to 10 per cent. ointment, or traumaticin may be substituted in place of the fat; or the drug may be utilized in the form of chrysarobin plaster, which can be bought ready-made. Chrysarobin should

never be applied to the head, however, because it is apt to produce dermatitis and severe conjunctivitis; tar ointments are more suitable for the scalp. Recently the following has been recommended:

℞ Lenirobin, 5–10 (gr. lxxv to ʒiiss);
Past. zinci, 100 (℥iij).

Pyrogallic acid should not as a rule be used for children on account of its irritating properties. Rubbing the skin twice a day with Wilkinson's ointment or the application of Vleminckx's solution, and finally the employment of protracted sulphur- and tar-baths also have a favorable effect on the disease.

Psychoses.—Moral insanity, terror-psychosis, confusional states, usually occurring in paroxysms and combined with delirium and hallucinations, may occur in childhood, especially in children with a hereditary epileptic or hysteric taint. The intensity and frequency of the attacks will have to decide whether the patient is to be sent to an institution. In some cases taking the child away from home, and thus changing its entire mode of life and education, has a favorable effect. In many cases the *prognosis* is doubtful.

Purpura.—This disease takes many forms in children, and a number of varieties are accordingly distinguished, at least nominally.

Purpura simplex is characterized by the appearance of punctiform petechiæ or extensive hemorrhages (**ecchymoses** and **suffusions**) in the skin, occurring either suddenly or in crops and causing very little disturbance of the general health.

When the appearance of the cutaneous hemorrhages is accompanied by rheumatic pains or follows an attack of articular rheumatism, the condition is described as **purpura rheumatica** (Figs. 118, 119). In such cases the hemorrhages are often extensive and usually more prominent about the affected painful joints. In accordance with its association with the articular affection this form is attended by more or less fever, and general involvement of the organism.

Purpura Hæmorrhagica or **Morbus Maculosus Werlhofii** belongs to the severer forms of the disease. In addition to the appearance of more or less extensive hemorrhages in the skin, hemorrhages also take place into and from the mucous membranes.

The disease frequently *causes* profuse epistaxis, hemoptysis, hematemesis, and intestinal and renal hemorrhages. In rare and very severe cases hemorrhages also take place into the

FIG. 118.—Purpura rheumatica in a boy ten years of age. Recovery in ten days.

retina, meninges, or ventricles, and cause secondary paralysis. When disease of the gums is a prominent feature in the presence of cutaneous hemorrhages and the social conditions of life are bad, the case should be diagnosed as scurvy.[1]

In the variety of the disease known as **purpura fulminans** the extensive cutaneous hemorrhages are secondary to severe

[1] [This must be distinguished from infantile scurvy, which has no etiologic relationship with purpura hemorrhagica.—ED.]

infectious diseases and bring on death within a few hours or days.

The *etiology* of the various primary forms of purpura is unknown; it may possibly be an infection, with pathologic changes in the blood-vessels and a reduction of the coagulability of the blood.

The disease usually attacks children who are brought up

FIG. 119.—Purpura rheumatica in a boy ten years of age. Recovery in ten days.

amid unfavorable surroundings, in wretched dwellings, and insufficiently fed. Secondary purpura occurs as a result of severe intoxication with carbolic acid, potassium chlorate, mercury, or after various infectious diseases, or diabetes, leukemia, and pseudoleukemia. The *prognosis* of the primary forms of purpura, with the exception of the fulminating variety, which is very rare, is usually favorable.

Treatment.—The patient must be put to bed and absolute rest insisted upon until days or even weeks have passed with-

out the appearance of any fresh hemorrhages, and the color of the original purpuric spots has faded. If the hemorrhages are extensive, lead-water or vinegar-water, 1 : 2 ; or aluminum acetate compresses, 1 : 4, are applied to promote absorption. These compresses should be changed two or three times a day or much more frequently, depending on the subjective symptoms. The extremities should be elevated and supported on soft cushions, as, for example, a bolster of chopped straw.

The selection of internal remedies will depend on the severity of the hemorrhages. Either the dilute acids, such as dilute hydrochloric, phosphoric or tartaric acid, 0.5–2 c.c. to 100 c.c. (8–30 min. to 3 fl. oz.), 1 teaspoonful to a dessertspoonful every two hours; solution of iron sesquichlorate, 10–20 drops to 100 c.c. (3 fl. oz.); or fluidextract of ergot, 2 to 5 drops three or four times a day; fluidextract of hydrastis Canadensis, up to 2 gm. (30 min.) a day; or a powder composed of:

℞ Ferr. citrat., 1 (gr. xv);
Extract. ergot., 0.30–0.50 (gr. ivss–viiss).—M.
Div. in dos. No. 10.
Sig. Three to five powders daily;

and, finally, stypticin tablets (Merck), ½ tablet three times a day. In the presence of profuse internal hemorrhages subcutaneous injections of ergotin solution (Bombellon) may be required once or twice a day.

The internal administration of a 5 per cent. solution of gelatin, 1 dessertspoonful up to a tablespoonful every two hours, or in the form of an enema twice a day, or a hypodermatic injection of a 2 per cent. solution of gelatin (40 gm. —10 dr.—per diem) may be recommended in this connection. In addition the concomitant symptoms in the various forms of purpura must also receive appropriate treatment.

The *diet* must be adapted to the patient's age and should consist of sweet or sour milk, kefir, green vegetables, raw or stewed fruit, and freshly broiled meat. The anemia during convalescence calls for a course of iron preparations, or some of the various preparations of cod-liver oil, quinin, arsenic, or cola-nut (Astier, Bergmann), or Stoll's "kolaessence."

In pronounced cases of scurvy unfavorable hygienic conditions must be corrected first of all. The dwelling should be dry and warm, with plenty of fresh air and light.

The digestion also requires careful attention, and the bowels must be kept loose. The various bitter tinctures (extracts or tinctures of quinin, centaureum, absinth, gentian, etc.) and the acids, especially citric acid, are useful remedies. Scorbutic gingivitis calls for the removal of defective teeth and stumps, a mouth-wash containing potassium chlorate, and the application of an astringent tincture (rhatany, myrrh, or guaiac) to the gums.

Purpura Hemorrhagica. See PURPURA.

Purulent Dermatitis. See ECTHYMA.

Pustular Eczema. See ECTHYMA.

Pyelitis (*Inflammation of the Pelvis of the Kidney; Renal Colic*).—Inflammation of the pelvis of the kidney is rare in childhood and is usually due to the presence of large uric acid concretions producing inflammation and suppuration. Sometimes pyelitis occurs as the result of cystitis by extension from the ureters to the pelvis of the kidney; and sometimes the cause cannot be discovered, so that one speaks of an idiopathic pyelitis.

Microscopic examination of the urine shows an admixture of more or less pus- and blood-cells as well as epithelium from the pelvis of the kidneys. The passage of a concretion through the ureters may give rise to renal colic, which is generally marked by the same clinical symptoms as are seen in enteralgia. These attacks occur suddenly, with violent pain, and are often attended by profuse sweating. Older children complain of pain radiating from the sacral region and distress during micturition, which is accompanied by violent strangury.

The *prognosis* in uncomplicated catarrhal pyelitis is favorable, but unfavorable when the kidney is involved (pyelonephritis).

The *treatment* consists of rest in bed, an unirritating diet, copious draughts of water, warm baths, and remedies to insure a daily evacuation of the bowels.

During convalescence great care is necessary to avoid catching cold on account of the danger of relapse. Drinking-cures with Karlsbad, Vichy, Fachingen, or Wildungen water are to be commended.

Pylorus, Stenosis of.—The *diagnosis* of pyloric stenosis, whether due to congenital narrowing or cicatricial contraction secondary to gastric ulcer or the pressure of hyperplastic lymph glands from without, is based on the occurrence of vomiting from fifteen to twenty minutes after the ingestion of very small quantities of food and the presence of dilatation of the stomach with rapidly progressing emaciation. Aside from structural changes in the pylorus itself or its surroundings, the trouble may be due to spastic contraction of the pyloric muscles which occurs during the first weeks of life. The diagnosis of pyloric stenosis is definitely established when a resistant tumor can be felt in the pyloric region. When the case has reached such a degree of severity, gastro-enterostomy must be proposed as the only possible means of saving life. In cases of spastic contraction of the pylorus the application of hot compresses and the administration of small doses of opium are recommended. The food should be given at very short intervals—one-half to one hour—and in small quantities, supplemented by nutritive enemas.

This rare disease has been repeatedly observed in several members of the same family.

Quincke's Lumbar Puncture. See LUMBAR PUNCTURE.

Quinsy Sore Throat. See ABSCESS, PERITONSILLAR.

Rachitis (*Rickets*).—A constitutional disease, occurring usually during infancy, the symptoms of which are chiefly localized in the bony skeleton and appear in a certain typical order. It is usually complicated by various other diseases.

Although many theories have been advanced, the *etiology* of the disease still remains somewhat in doubt. The predisposing *causes* are unfavorable hygienic surroundings, improper food with the resulting digestive disturbances, and, finally, heredity.

Pathologically, there is always an increased vascularity of the ossifying tissue, diminished or abolished deposition of calcium, softening of calcified portions, and abnormal proliferation of ossified tissue owing to increase of the cartilaginous cells at the epiphyses of the long bones (Fig. 120).

Rachitis is usually preceded by prodromal symptoms, and much often depends upon their proper recognition. The child becomes nervous, irritable, restless, and tearful, although in other respects seeming to thrive as usual; there is some disturbance of the general health and sleep is frequently interrupted, the child starting up suddenly in fright and crying out.

FIG. 120.—Cross section through the head of the humerus of a rachitic child. Twice natural size.

Soon unusual bodily restlessness is observed, particularly a constant to-and-fro rubbing movement of the head on the pillow, producing progressive baldness of the occiput. While the child is nursing and during sleep the head is covered with perspiration.

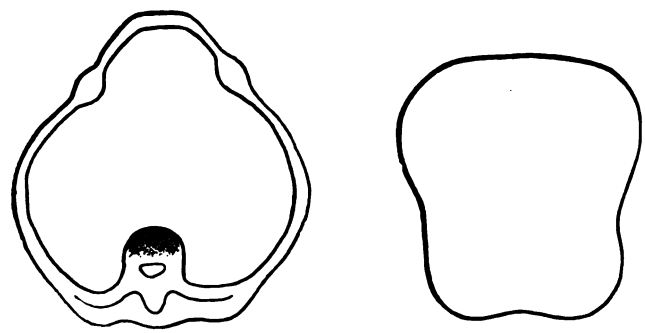
In addition to these external changes, dyspeptic disturbances of various kinds and duration, catarrhal symptoms referable to the bronchial system, and diseases of the skin in the form of sudamina or eczema soon develop.

When these general symptoms suggest an examination, soft areas may be found in the bones of the skull, especially on the occiput, when the head is palpated with both hands, and parchment-like crepitation is sometimes elicited. This first and most frequent symptom of rachitis is known as craniotabes.

Before long other changes make their appearance in the cranium, which, however, do not depend on softening of the bony tissue as in craniotabes, but are due to osteogenetic pro-

liferation, and accordingly manifest themselves by thickening of the bones. In this way the parietal bones and frontal eminences particularly become thickened, and, when the condition is marked, produce the characteristic quadrangular appearance of the skull (Fig. 121, II).

These disturbances in the growth of the bones and the hydrocephalic dilatation of the cavities of the brain, which frequently accompanies the rachitic changes, for a long time retard growth at the fontanel and sutures, causing abnormal enlargement of the anterior fontanel and separation of the sutures. As a result the closure of the fontanels,



I II

FIG. 121.—Diagrammatic cross-section through (I) the thorax (*pectus carinatum*) and (II) the head (*caput quadratum*) of a rachitic child two years of age.

which in the normal child is completed in the eighteenth or twentieth month, occurs much later in rachitic children.

Corresponding to the changes in the cranium, visible changes in the face and jaw bones are observed. The teeth present marked irregularities of position and appear late and at irregular intervals.

The changes in the bones of the skull are followed by changes in the thorax, which develop during the second six months of the child's life. The ribs present the well-known swelling and thickening at the costo-chondral junctions, which have been described as the rachitic rosary. Owing to the soft condition of the ribs, which is a feature of the disease, various deformities of the thorax are produced, not only

by external pressure on the ribs, but also by the traction of the respiratory muscles. The upper portion of the thorax on one or both sides is narrowed, while the lower opening is abnormally large and everted, like the brim of a hat [producing above the margin of the ribs the furrow known as Harrison's groove]. This deformity also produces a secondary change in the sternal region, which has been called chicken-breast (**pectus carinatum**) (Figs. 121 (I), 124).

Characteristic changes also appear in the clavicles, with enlargement of the epiphyses and thickening, bowing, or even infraction of the diaphyses and excessive callus formation (Fig. 122). The shoulder-blades are thickened, especially along the edges. If the child is held in an erect position too long, the vertebral column exhibits scoliosis, to which kyphosis is later added; or the latter may be present alone or associated with a secondary lordosis.

FIG. 122.—A rachitic child one year of age, with lumbodorsal kyphosis and several infractions of the ribs on the right side.

Rachitic curvatures, especially kyphoses, develop not only as a result of excessive sitting, which is due to the fact that the child is slow in learning to walk, but also from lying on too soft a bed. Kyphosis, which as a rule affects the lumbar region (compare Figs. 124 and 125), usually disappears spontaneously if a flat mattress is used instead of a soft feather bed.

The latest rachitic bone changes develop in the extremities. At first a circular swelling appears at the epiphyses, and later a great variety of curvatures develops in the soft

diaphyses, in part owing to the pull of the muscles and to pressure while the child is sitting, standing, or walking, and in part to the remarkable India-rubber-like flexibility of the limbs, which is still further enhanced by the relaxed condition of the joints. Spindle-shaped swellings are not infrequently observed in the bones of the fingers, especially in the first and second phalanges.

The bones of the pelvis also take part in the rachitic

FIG. 123.—Hygienic rocking-chair for children (after Professor Epstein) (Firm of Thonet of Vienna).

changes, by which pelvic stenoses of very great import in after life are often produced.

The secondary symptoms of the rachitic process are both general and local, the latter due to the changes in the bones. Among the *constitutional symptoms* special attention should be directed to the nervous irritation, which manifests itself by a noticeable change in the child's disposition; sleeplessness; sudden fright during sleep, which is often interrupted and of short duration; increased sweating; and a tendency to spasm of the glottis or general or partial muscular convulsions.

In addition to these symptoms, which must be referred to

the central nervous system, many other disturbances are present. The skin of rachitic children is pale and frequently covered with eczema; the fatty tissue is flaccid or abnormally developed; the muscles are flabby and there is a strong

FIG. 124.—A child three and one-half years of age presenting an extreme degree of rachitis, kyphoscoliosis, chicken-breast, and frog-belly. Every attack of bronchitis is accompanied by grave asthmatic seizures; drum-stick fingers; spontaneous loosening and falling out of the first teeth shortly after their eruption.

tendency to chronic diseases of the respiratory and digestive organs.

These last-mentioned diseases also contribute to the deformity of the thorax; the former by reason of the accelerated respiration and spasmodic cough, the latter by reason of the meteorism which follows digestive disturbances.

Sometimes marked enlargement of the liver, and especially of the spleen, as a result of fatty or amyloid degeneration, can be demonstrated in rachitic subjects, but the connection between these processes and rachitis is still in doubt; it is particularly important in this disease not to mistake a low position of these organs for an enlargement.

In rachitis the affected bones are the seat of pains which are aggravated by active or passive movement. In beginning rachitis of the thorax the child always shows evidences of pain and sensitiveness, especially when it is taken up. In rachitis of the extremities marked changes occur, especially in the legs. The child usually avoids violent movement of any kind and keeps the arms, and especially the legs, in extension. When small children are taken up, as for the purpose of changing them, they cry out; and in the same way older children howl whenever an attempt is made to set them on their legs, and draw the legs up against the body.

When rachitis develops late the child complains of fatigue in the legs. Fatigue shows itself after the slightest exercise, and the child finally avoids movement altogether. As a rule they assume the so-called pagoda attitude (Figs. 124, 125), the legs flexed at the joints and crossed, thus increasing the tendency to bowing of the bones and infraction.

Rachitis always runs a chronic course and often lasts for years, ending in complete recovery, with more or less marked changes in the skeleton which are permanent.

The *prognosis* of the disease, in the absence of any alarming symptoms referable to the respiratory or digestive organs or to the nervous system, is favorable. The most dreaded complications are laryngospasm and convulsions (see their respective headings), which not infrequently cause death in several members of the same family.

In the *prophylaxis* of rachitis due attention must be given to all those conditions and factors which contribute to the production of the disease. The dwelling must be kept clean and well aired; the child should spend as much time as possible in the open air; and bodily cleanliness by means of baths or ablutions to harden the body should be insisted upon.

In the same way the baby's nutrition must receive attention by instituting natural feeding or some rational form of artificial feeding, with due regard to any intestinal disturbance requiring treatment.

When rachitic deformities have begun to develop in the bones, it becomes part of a rational prophylaxis to take measures to prevent these changes from becoming worse, as they

FIG. 125.—Child five years of age with severe rachitis (68 cm. long, weight 4800 g.): Spontaneous falling out of the recently erupted first teeth; kyphoscoliosis; chicken-breast; severe asthmatic seizures; drum-stick fingers.

may be expected to do. Thus, constriction of the body should be avoided; if possible the child must not be allowed to be carried about too long at a time—constantly carrying the child on one arm is specially reprehensible—nor be allowed to sit up or stand. The deformities that remain after the rachitis has run its course require orthopedic treatment; although in many cases it is remarkable to what extent the deformities disappear of their own accord later in life without such treatment (Fig. 123).

The very large number of internal remedies formerly employed in rachitis has been considerably restricted during recent years. One of the oldest remedies, and one that has not been replaced by any other preparation, is cod-liver oil. This is ordered at the beginning of the disease, especially in infants, in the form of a 10 to 20 per cent. emulsion, as follows:

℞ Ol. jecoris aselli, 10–20 (f℥ijss–v);
Mucilag. gummi arab.,
Aq. destil., āā q. s. ut fiat emuls. 90 (f℥iij);
Syr. cort. aurant., 10 (f℥ijss).—M.
Sig. One teaspoonful or dessertspoonful three times a day.

As soon as the degree of toleration has been ascertained, ½ teaspoonful to 1 dessertspoonful of pure cod-liver oil may be given once or twice a day before meals, but only during the cold season of the year. When the oil causes dyspeptic disturbances medication should be suspended for a time and then an attempt made with some other oil, such as oil of sesame or lipanin, with a few drops of oil of peppermint.

The practice of combining cod-liver oil with phosphorus has found many adherents, and there is no doubt that good results are obtained by administering such a mixture for one or more months, especially in the presence of nervous symptoms:

℞ Phosphori puri, 0.01 (gr. ⅙);
Ol. jecor. aselli, 100 (f℥iij).—M.
Sig. One teaspoonful a day.

Other prescriptions for the administration of phosphorus are:

℞ Phosphori, 0.01 (gr. ⅙);
Ol. amygdal. dulc. aut lipanini, 30.00 (f℥j);
Sacch. alb.,
Pulv. gummi arabic., āā 15.00 (℥ss);
Aq. destill., 40.00 (f℥x).—M.
Sig. One teaspoonful a day

Or,

℞ Phosphori, 0.01 (gr. ⅙);
Ol. amygdal. dulc., 10.00 (f℥ijss).—M.
Sig. Ten drops in milk, morning and evening.

In the case of older children Gärtner's phosphor-chocolate tablets, one, and later, two a day, scraped and suspended in a tablespoonful of water; any reliable cod-liver oil emulsion; Vin Vivien; Lahusen's iron-cod-liver-oil; and lecithol (Riedel) and lecithin preparations (Clin), which contain 4 per cent. of phosphorus, are indicated. Of the latter the dose is one teaspoonful three times a day in warm milk. Effervescent cod-liver oil (Helfenberg), Stroschein's Ossin and Natterer's cod-liver oil tablets may also be mentioned.

In addition to these drugs sanatogen in the dose of 15 to 30 gm. (½–1 oz.) daily, dissolved in milk, has been recommended. The resources of organotherapy may be utilized by administering adrenal gland substance in the form of tabloids, or a Merck preparation known as "rhachitol."

Any complication referable to the respiratory and digestive organs occurring during rachitis must receive immediate and careful attention; the *treatment* of these conditions will be found under the respective heads.

The anemia which almost always accompanies rachitic processes must be corrected by means of iron preparations. The following may be recommended:

℞ Syr. ferri iodid,
Syr. simpl., āā 30.00 (f℥j).

Or,

℞ Tinct. ferri pomat.,
Tinct. amar. aut tinct. chinæ, aa 30.00 (f℥j).—M.

Sig. Three to five drops several times a day for infants;

or lactate of iron 0.10 to 0.30 gm. (1½–4½ gr.) several times a day; ferratin 0.10 to 0.50 gm. (1½–7½ gr.) per diem; hæmaticum (Glausch), hematogen (Hommel), perdynamin 2 to 3 teaspoonfuls a day; or eubiose in the same dose.

Baths and a stay at the seaside or in the mountains have a most favorable effect on the rachitic process.

For *home treatment* a bath may be prepared by adding salt, brine tablets (soletabletten), 3 to 6 per cent., or some aromatic substance such as camomile or calamus, or Feldau-Kiefermoor-Extrakt and the like; the bath should be lukewarm and should be administered every other day. Both during

and after the bath friction must be employed, or the body may be rubbed with bathing whisky.

Rachitis, Congenital.—Various morbid processes were formerly included under this name, because they had some symptom in common with true rachitis; for example, **chondrodystrophia fœtalis** (see NANISM), **myxedema** (*vide*), **osteogenesis imperfecta,** and others. **Osteogenesis imperfecta** (*Osteoporosis*) is a fetal disease of the bones characterized by deficient forma-

FIG. 126.—Osteogenesis imperfecta (osteoporosis). Child three weeks of age with numerous intra- and extra-uterine fractures and infractions.

tion of bone substance affecting the entire skeleton (Fig. 126). The bones are so fragile that numerous infractions and fractures are formed in utero and many more are added during extra-uterine life owing to the unavoidable handling of the infant while feeding and changing it.

Ranula.—A tumor about the size of a cherry, situated under the tip of the tongue on the floor of the mouth, and often observed in newborn infants. The growth represents a

retention cyst of the salivary duct, or an enlargement of the mucous pouch on the genioglossus muscle (Fig. 127). Depending upon the size of the cyst the tongue is pushed up toward the roof of the mouth, causing more or less disturbance of oral respiration and of the act of sucking.

The *treatment* consists in extirpation or excision of the anterior wall, followed by repeated cauterization of the cyst wall.

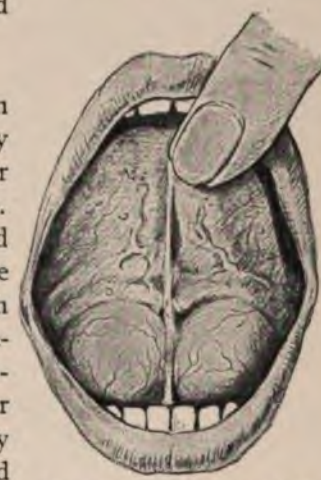


FIG. 127.—Bilateral ranula in a child five years of age.

Rectal Polypi.—Older children sometimes pass blood or bloody mucus from the rectum during or after evacuation of the bowels. The passage of blood is attended with pain. Such *symptoms* are *caused* by mucous polyps, which usually have their seat in the rectum. Sometimes the polypi prolapse, either during defecation or after the act, or even independently of it as a result of tenesmus, and either become constricted by the external sphincter or rapidly withdraw again into the bowel (Fig. 128). The condition may be mistaken for **bleeding hemorrhoids**, or if the intestinal symptoms predominate, as is often the case, for **enteritis**; hence a digital examination should be made in every doubtful case. It is true that a polyp may escape observation even when this method is used, because it may be seated high up in the bowel and may be very movable. Quite frequently the polyp comes away of its own accord. A polyp with a long pedicle may be forced out of the rectum during defecation, when it may be seized with forceps, ligated with sterilized silk, and then removed. A prolapsed polyp can also be extirpated by seizing it with the fingers and twisting it off. The secondary hemorrhage can be controlled by injecting cold water, or, if necessary, by packing the rectum with dermatol- or iodoform-gauze.

But if the polyp is not visible under any circumstances and can only be felt with the finger, a more complicated surgical intervention is necessary whenever, as a result of severe hemorrhage, secondary anemia develops or the irritation set up by the polyp acting as a foreign body produces painful tenesmus and frequent evacuation of the bowels. In such

FIG. 128.—Prolapsed rectal polyp which bleeds at the slightest touch, in a boy six years of age.

cases the rectum must be explored with a speculum and the polyp snared off with a cold or galvanic loop.

Recti Muscles, Diastasis and Hernia of. See DIASTASIS AND HERNIA OF RECTI MUSCLES.

Rectum, Atresia of. See ATRESIA OF THE ANUS AND RECTUM.

Rectum, Dilatation of. See CONSTIPATION.

Rectum, Prolapse of. See PROLAPSE OF ANUS AND RECTUM.

Renal Calculi. See PYELITIS.

Renal Colic. See PYELITIS.

Renal Hemorrhage. See HEMORRHAGE, RENAL.

Respiration, Artificial. See SCHULTZE'S METHOD.

Retropharyngeal Abscess.—This comparatively rare disease, which practically occurs only during the first year of life, is *due* to inflammation and suppuration of the retropharyngeal lymph glands along the vertebral column and of the surrounding cellular tissue. Even when the child is apparently in perfect health retropharyngeal abscess is not to be regarded as an idiopathic condition, for it always has its origin in some previously unnoticed infection in the region drained by the lymphatics that supply these glands (nasal and pharyngeal lymphatics).

Like suppuration of other lymph glands in the neck, the condition is observed chiefly in debilitated and especially in scrofulous children. In a few cases the abscess has its origin in tuberculous caries of the cervical vertebræ; or may develop as the result of purulent metastasis in the course of various infectious diseases.

The *clinical picture* of a fully formed abscess is made up of the following symptoms: The child breathes through the mouth; the respirations are difficult, labored, and snoring; pain is complained of with active or passive movement of the head; and deglutition is obviously difficult. The child chokes when it tries to drink, and the fluid regurgitates through the nose. On inspection the oral cavity is found to be partially obstructed by the presence of a prominent, inflammatory tumor, usually seated slightly to one side and as large as a nut or larger, and forcing the soft palate forward. Distinct fluctuation can be detected with the finger.

As the process goes on the above-mentioned symptoms gradually become aggravated and are often attended by high fever, disturbed and restless sleep, and involvement of the glands at the angle of the jaw.

As soon as a positive *diagnosis* of abscess has been made, incision with the head bent forward is the only form of *treatment* to be considered, and under certain circumstances may save the patient's life. A sharp bistoury is selected and the blade wrapped with adhesive strips, so as to leave only the point free. There are also specially constructed instruments with protected points. The knife is introduced under the guidance of the index finger as far as the vertebral column and carried upward, after which the head is at once lowered to prevent aspiration of the pus.

After the abscess has been opened it must be watched for a few days, to see that the incision does not close too rapidly and allow the abscess to form again. Owing to the presence of the primary disease the treatment and incision of a spondylitic secondary abscess require the service of a specialist.

If the diagnosis of retropharyngeal abscess can be made at the very beginning of the disease, cold may be applied. After the abscess has been opened, warm throat compresses are indicated and the oral cavity must be disinfected by means of gargles, and, in the case of very small children, by frequently repeated irrigations with the head inclined forward, to be performed by the physician.

Rheumatism, Acute Articular.—Acute articular rheumatism undoubtedly belongs to the infectious diseases, although the true specific micro-organism has never been isolated from the many staphylococci and streptococci that have been found.

The micro-organism, whatever it be, probably enters in most cases through the oral cavity or the tonsils, since acute articular rheumatism not infrequently develops during or after some inflammatory process in those structures. The outbreak of the disease is rarely preceded by true prodromal symptoms, such as disturbance of the general health. As a

rule the disease *begins* with fever of variable degree, soon followed by pain in one or more joints. The latter often become greatly swollen, are exceedingly sensitive to the touch, and the skin over them is tense and often reddened. The swelling jumps about from one joint to another, and as each joint is attacked in turn, the fever is renewed; sometimes a joint that has already been diseased is attacked a second time. In uncomplicated cases the pain first disappears, then the swelling, and finally, movement is restored; diuresis becomes greatly increased and the body is covered with perspiration which emits an excessively acid odor. Sometimes petechial hemorrhages take place in the skin covering the inflamed joints.

Among the *complications* of articular rheumatism, disease of the heart, especially of the endocardium (see ENDOCARDITIS), is the most important, because it may lead to permanent valvular lesions, and may, if the disease is severe, even bring about a fatal termination. The heart disease which complicates articular rheumatism occasionally leads to chorea minor (*vide*). A tendency to recurrence persists for some time after recovery from an attack of articular rheumatism, and persons so predisposed are in danger of a second attack from exposure to cold if they live in a damp dwelling or a damp climate.

The *treatment* of acute articular rheumatism consists in securing rest for the affected joint by placing it upon a pillow or applying splints, the local use of ice-, Priessnitz-, or alcohol-compresses, and internally the exhibition of sodium salicylate, or, if this is not well borne by the stomach, aspirin in doses of 0.20 to 0.50 gm. (3–7½ gr.), three or four times a day, or salophen, antipyrin, salol, phenacetin, or salipyrin in the same dosage; but with the exception of sodium salicylate and aspirin (or salophen) these preparations must be avoided in the presence of any cardiac complication. The internal administration of salicylates in reduced doses must be kept up for some time after the acute stage has run its course. As anemia usually follows an attack of rheumatism, iron preparations are indicated for some time.

The *diet* should be adapted to the general condition and should consist chiefly of vegetables and milk. If there is much thirst, alkaline mineral waters are given. When stiffness of the joints and interference with movement persist, the trouble may be corrected by means of warm baths, fango-baths, and passive movements.

Recurrence should be guarded against by avoiding damp dwellings, by care in selecting suitable clothing, and by the employment daily of procedures to harden the body.

Rheumatism, Chronic Articular.—This is rare in childhood and is usually secondary to an attack of acute rheumatism. Sometimes the painful joints exhibit slight swelling. The urine is usually rich in uric acid. Internally the same preparations are given as in acute rheumatism, and in addition, potassium iodid, 1 per cent., and ichthyol (up to 0.3 gm.—4½ gr.—per diem in pill form); also the lithium preparations (lithium carbonate 0.5–1 gm. to 100 c.c.—8 to 15 gr. to 3 fl. oz.), and alkaline mineral waters. Good results have also been reported from the use of arsenic.

Locally, applications of ichthyol and glycerin, equal parts of each; painting the skin with mesotan and olive oil, equal parts; placing the affected joint in a hot pack; fango-baths (Monfalcone or Battaglia); Pistyan mud-compresses; and hot-air cures, have a favorable effect. A drinking-cure at Baden-Baden, Wiesbaden, Karlsbad or Tarasp, or sulphur, iron-mud or thermal baths, followed by massage and gymnastic exercises, are sometimes recommended.

Rheumatismus Nodosus.—In this form of joint-disease which frequently follows acute rheumatism, nodules of varying sizes up to that of a walnut, and consisting of connective or fibrocartilaginous tissue, are found either disseminated or symmetrically distributed over the tendons or bones. The nodes are painful to pressure and their development is accompanied by a slight febrile rise. After lasting for some months they either disappear completely or leave permanent contractures of the tendons.

The *treatment* is the same as that of acute and chronic rheumatism.

Rhinitis, Acute (*Coryza; Cold in the Head*).—This condition occurs as an independent affection or as a concomitant of a great variety of other diseases.

Primary, as well as **secondary**, coryza exhibits the characteristic symptoms of a mucous catarrh: hyperemia, and excretion of a watery, glairy, and, later, purulent discharge.

Primary coryza is *caused* by exposure to cold, especially during sudden changes of temperature, and in view of the fact that the disease is often epidemic it is possible that one or several kinds of microbes may contribute to its causation. Apparently very many children, especially so-called lymphatic children, are predisposed to the disease.

Acute coryza, finally, represents an important symptom in certain infectious diseases, and as such will be referred to under the respective headings.

A cold in the head manifests itself by more or less severe disturbance of the general health, fever, violent attacks of sneezing, cough, and especially by interference with the breathing, which is most marked during sleep. The secretion is strongly saline and soon causes swelling or even erosion in the nasal passages and on the upper lip.

By extension of the catarrh to neighboring mucous membranes, conjunctivitis, edema of the lids, catarrh of the frontal sinuses, aural affections, and catarrh of the membranes of the deeper respiratory passages may be brought about. In some cases an acute coryza is followed by considerable enlargement of the glands in the neck and in the submaxillary region.

The *prognosis* of acute nasal catarrh is almost always favorable; in infants at the breast, however, the *favorable course* of the disease is somewhat marred by the fact that even without the occurrence of any other complication the obstruction of the nasal passages may interfere with the taking of food to such an extent that the child has to be fed with a spoon. The respiratory disturbances in young infants are often so severe that aspiration phenomena may occur in

the thorax and in the clavicular fossæ, much in the same way as in croup.

For this reason *local treatment* should receive special attention, particularly in infants, and every effort should be made to maintain the free passage of the air through the nose. This is effected partly by pouring into the nose a teaspoonful of milk taken from the breast, or cows' milk diluted with an equal quantity of water (contraindicated if there are signs of ear trouble), and partly by anointing the nasal passages.

In severe cases it becomes necessary to remove the thick nasal secretion with suitable instruments, as, for example, by sucking it out with an ordinary glass uterine tube. Ointments suitable for application to the nasal passages are: yellow or white precipitate or boracic acid 0.10 to 10 gm. (1½ gr. to 2½ dr.) of vaselin; 5 per cent. borated liquid vaselin; 5 to 10 per cent. airol-lanolin ointment; or a ½ to 1 per cent. solution of boric acid, or normal salt solution, may be injected with the atomizer, and 5 drops of a 1 : 10,000 adrenalin chlorid solution may be injected several times a day.

In order to prevent as much as possible the drying out of the nasal secretion the necessary degree of moisture should be given to the air of the room by a nebulized spray of water, by hanging up wet cloths, or by allowing water to evaporate from shallow vessels.

These measures should also be employed in the case of older children. Until improvement takes place (disappearance of the fever) the child must be kept in bed, and the sick-room must be well aired and kept at a uniform but not excessive temperature.

This makes it easily possible to encourage diaphoresis, which may be done by wrapping the head and trunk in dry cloths and administering diaphoretic teas or hot lemonade. Bathing should be discontinued.

Internal medication can, as a rule, be dispensed with altogether, unless the fever is very high, in which case antipyretics, such as antipyrin, aspirin, salipyrin, citrophen, or

lactophenin, in doses adapted to the child's age, may be prescribed. These remedies tend to bring about the wished-for diaphoresis in addition to reducing the temperature.

In order to combat the tendency to renewed attacks it is important to improve the powers of resistance in these children by means of procedures to harden the body, and especially by insisting on their spending much time in the open air. For the same reason many causes of coryza, such as adenoid vegetations and the scrofulous diathesis, must also be subjected to appropriate treatment.

Rhinitis, Chronic (*Ozena*).—The chronic form of rhinitis frequently owes its *origin* to an acute coryza and occurs especially in rachitic, tuberculous, scrofulous, and syphilitic children. In many cases the *condition* is brought about and kept up by foreign bodies in the nose, in which case it is unilateral, and by hypertrophy of the pharyngeal or palatal tonsil.

The chronic inflammation of the mucous membranes later leads to atrophy and in rare cases to hypertrophy of the nasal mucous membranes and to disease of the accessory sinuses. In some constitutional diseases the inflammation may extend to the perichondrium and periosteum and cause necrosis of the cartilage or bone, resulting in depression of the bridge of the nose.

The secretion in chronic coryza is often quite scanty, and, as it dries, forms adherent crusts, which almost completely prevent nasal respiration ; the decomposition of these crusts leads to ulcerative processes in the mucous membrane, with the production of a most offensive secretion (ozena, "stink-nose"). Associated with this last-mentioned condition there may be hypertrophic swelling or atrophy of the nasal mucous membrane, and thickening of the nose and upper lip, producing the characteristic picture which at once establishes the diagnosis of scrofula.

The disturbances produced by chronic nasal catarrh in many respects resemble those observed in cases of adenoid vegetations and consist in obstruction to nasal respiration,

especially at night, restless sleep, asthmatic attacks, headache, a nasal, toneless quality of the voice, and secondary disease of the ears.

The secretion is most irritating to the nasal passages, and the lower, as well as the upper, lip become inflamed and ulcerated; the submaxillary lymph glands are almost always enlarged. The offensive odor from nose and mouth and the characteristic general picture of the disease render the *diagnosis* quite easy. Ozena not infrequently gives rise to erysipelas, which begins in one of the nostrils.

The *prognosis* of the condition, especially in the presence of severe scrofulous or luetic disease, is always very doubtful as regards recovery.

Treatment.—More than in almost any other disease must the causal factors be taken into account in the treatment of chronic rhinitis; hence the various therapeutic measures discussed under the headings SCROFULOSIS and SYPHILIS must be strictly observed. The local treatment consists mainly in softening the accumulated crusts and flushing out the nasal passages. For this purpose various ointments and oils (see RHINITIS, ACUTE) are at first employed, after which the nose is irrigated with various contrivances designed for the purpose, some of which are shown in Fig. 24, or with the "nasal douche," which, however, carries with it the danger of injury to the middle ear. The irrigation is performed first with physiologic salt solution and then with some disinfecting fluid; or a disinfecting powder may be insufflated into the nasal passages. One of the following may be ordered: 1 to 2 per cent. resorcin, ½ per cent. potassium permanganate, or a 3 per cent. solution of boric acid; or the following may be applied with a cotton-wound applicator: ichthyol 1 : 10 of water; balsam of Peru with glycerin, equal parts; iodin and carbolic acid, of each 0.10 gm. (1½ gr.), with potassium iodid 2 gm. (30 gr.), and glycerin 20 c.c (5 fl. dr.); or a 3 per cent. solution of boric acid in liquid paraffin; or, finally, a ½ to 1 per cent. red precipitate ointment.

A cotton-wound applicator is saturated with one of these solutions and introduced as far as possible into the nasal pas-

sages with a rotary movement; the ointments are used in the same way.

The following powders may be used for insufflation: boric acid; aristol; potassium sozo-iodolate with sugar, equal parts of each; or calomel 1 to 15 parts of sugar; zinc sozo-iodolate 1 part to 10 of sugar; or a mixture of salol 5 gm. (75 gr.), boric acid 2 gm. (30 gr.), salicylic acid 0.5 gm. (7½ gr.), thymol 0.2 gm. (3 gr.), and talcum powder 10 gm. (2½ dr.).

Separation of the crusts can sometimes be promoted by leaving a piece of damp salicylized cotton in the nose for from one-quarter to one-third of an hour, and secretion may be stimulated by massage of the atrophic mucous membrane.

Rhinitis, Fibrinous.—As in the case of the tonsils, benign fibrinous exudates sometimes *occur primarily* in the nasal passages, although in both forms of the disease diphtheria should always be suspected, nor is the suspicion entirely allayed by a negative bacteriologic examination (see DIPHTHERIA).

These fibrinous exudates, which may be caused by various kinds of micro-organisms, are sometimes superficially of a grayish color, suggesting the thinness of a veil; sometimes the exudate extends into the submucous layer and is thicker and of a dull-white, glistening color. These superficial exudates can be separated with relative ease, and sometimes form a complete cast of the nasal passages. The thicker exudates cannot be removed without some loss of tissue and hemorrhage, and leave abraded surfaces, which, however, soon heal over. The submaxillary glands in this condition may be either normal or slightly enlarged.

There is frequently but little change in the general health in fibrinous rhinitis, the most prominent disturbances being interference with nasal respiration, which is of special significance in the case of infants. In other respects the *symptoms* suggest the picture of an acute coryza. Soon, however, a more or less abundant exudate is observed in the nasal passages. The separation of the exudate is sometimes effected very slowly and relapses are apt to occur.

The *prognosis* in genuine fibrinous rhinitis is usually good, being unfavorable only when the child's nutrition is bad.

As the *cause* of the disease is usually in doubt, isolation of the patient is always indicated.

The *treatment* consists in softening and separating the false membrane by irrigations with a 10 per cent. solution of lime-water, or the application of a 5 per cent airol, ½ per cent. precipitate, or 5 per cent. boracic ointment.

Rickets. See RACHITIS.

Ringworm. See HERPES TONSURANS.

Rötheln (*Rubeola*, *Rubella*).—An independent disease closely related to measles and occurring in *epidemic* form. It is one of the mildest infectious diseases of childhood. After a period of incubation, which may lasts several weeks [averaging fifteen to eighteen days—ED.], the most important *symptom* of the prodromal stage, consisting in a variable degree of enlargement of the cervical and postcervical glands, makes its appearance and is soon followed by a light-red or pale-red eruption (enanthem) on the palate, without any Koplik spots.

The cutaneous eruption which immediately follows also begins on the face, as in the case of measles, but is much paler; the macules are smaller and sometimes miliary; and the rash rapidly spreads, within a few hours or days, to the entire body. By the time the rash has reached the last portions of the body to be affected, the earliest lesions have already begun to fade. Often there is very little elevation of temperature, and there is practically no involvement of the conjunctivæ or of the respiratory organs.

In view of the absolutely favorable course, which is never marred by any complications, and the insignificance of the disease, neither *prophylactic nor therapeutic measures* are necessary. As long as there is any sign of the eruption the child should be kept in bed; after the rash has faded and the temperature is normal, the child may be allowed to get up, and one or several warm baths may be permitted. Associa-

tion with other children should not be allowed until convalescence is well established.

Roundworms. See INTESTINAL PARASITES.

Rubella. See RÖTHELN.

Rubeola. See RÖTHELN.

Sarcomphalos. See UMBILICUS, DISEASES OF.

Scabies (*Itch*).—The invasion of the skin by the itch mite (**Sarcoptes hominis**) in children, and not infrequently in infants, may give rise to a cutaneous eruption which is caused by the presence of the mite beneath the epidermis. As the itching is quite severe there is much scratching, which may give rise secondarily to eczema, usually of a pustulous character.

The *diagnosis* of scabies is established by finding the burrows, although it is hardly possible to do so in young children. The localization of the lesions, which are found chiefly on the hands between the fingers, rarely between the toes, around the navel and in the axillary and inguinal folds, is of more value in such cases.

Under all circumstances the microscopic demonstration of itch mites or of the ova in the individual burrows or pustules is absolutely decisive.

A relatively rapid *cure* for this cutaneous disease can be effected by first soaping the entire body and then giving a full bath and anointing the affected parts twice a day with Wilkinson's ointment, 10 per cent. epicarin ointment, or 5–10–15 per cent. naphthol ointment. Or the following may be prescribed:

℞ Styrac. liquid., 50 (f℥jss);
Ol. olivarum, 40 (f℥x).—M.

or balsam of Peru 15 c.c. (½ fl. oz.) with 10 c.c. (2½ fl. dr.) of alcohol; or balsam of Peru and simple ointment, equal parts of each.

Or,

℞ Losophan, 5–10 (gr. lxxv–ʒijss),
lenı calore solut. in ol. olivarum, 20 (fʒv);
Adipis suill., q. s. ad. 100 (ʒiij).
M. et ft. unguentum.

After one of these remedies has been rubbed in twice a day for four or five days, as directed above, the body is once more well rubbed with soft soap, which is then washed off in a hot bath.

If eczematous irritation of the skin develops as a result of the inunctions, some indifferent dusting-powder must be used for a few days.

Scarlatina. See SCARLET FEVER.

Scarlet Fever (*Scarlatina*).—Scarlet fever is one of the most severe *infectious* diseases, the course and ultimate sequelæ of which it is often impossible to determine beforehand.

The scarlatinal virus, which still remains to be discovered, does not explain the grave and sometimes unexpected complications that arise in this disease and which must be due to a mixed infection with streptococci, causing an often fatal bacteriemia or numerous metastatic inflammatory conditions in the joints, glands, kidneys, lungs, pleura, and heart.

The virus of scarlet fever is probably transmitted in most cases by the secretion from the throat and also by the desquamated skin, as well-authenticated cases convincingly show. Either of these media may be transmitted to healthy persons by direct or indirect contact; hence the importance of the mode of transmission from a prophylactic standpoint and the necessity of every physician bearing it constantly in mind.

The disturbances of the general health during the period of incubation, which varies in duration up to two weeks [but usually does not exceed three to five days—ED.], are not marked enough to suggest the probability that such a severe infectious disease is in process of evolution.

As a rule the onset is sudden, often accompanied by vomiting or convulsions, and in older children by chill. The fever is often high from the very start.

During the prodromal stage the most important *symptom* consists in redness and swelling of the mucous membrane of the hard and soft palate and of the tonsils, with enlargement of the submaxillary glands.

The tongue is also inflamed and swollen, the center being often thickly coated with a white exudate, and later on, owing to the separation of the exudate and swelling of the papillæ, assumes the characteristic appearance which has been designated "raspberry" or "strawberry" tongue. Almost at the same time, or within the next day or two, the eruption makes its appearance, usually at first on the neck, or very rarely on the face, and spreads in successive crops from the head downward over the entire body.

The eruption consists of small macules delicately stippled and so close together as to leave practically no normal skin between the lesions. The rash is usually of a distinctly scarlet red color and sometimes small petechiæ are present. The color varies greatly according to the intensity of the rash. In larval attacks of scarlet fever the rash may be exceedingly fugacious and of a pale-red color, the skin presents a stippled appearance, and the eruption may disappear altogether within a few hours or days. In most cases, however, the course is quite different, and when the eruption is more intense it is attended by severe itching and persists for from six to eight days (**stadium floritionis**); after which the temperature, which is often quite high, subsides and the rash gradually fades away, leaving a branny or lamellar desquamation. Great differences are observed both in the appearance of the rash and in the scarlatinal sore throat, which appear to depend on the degree of the infection or the severity of the epidemic. These differences have already been mentioned in describing the eruption; it should be added, however, that a dark, livid, blue eruption with numerous hemorrhages into the skin, and the so-called **scarlatina pemphigoides** belong to the severest forms of scarlatinal eruptions, while the varieties

known as **scarlatina miliaris** and **scarlatina variegata** (in which the lesions appear in groups) represent the milder forms.

Scarlatinal angina, as the primary localization of the scarlatinal poison, may present the usual form of catarrhal angina with moderate swelling of the glands at the angle of the jaw, or the tonsils may be the seat of small patches of localized necrosis which disappear in a few days.

Cases in which widespread gangrene of the oral and pharyngeal cavity develops are designated scarlatinal diphtheria.

In this grave disease, which often occurs during the first days of an attack of scarlet fever, there are profound septic symptoms, and inspection of the pharynx reveals a diphtheria-like inflammation of the tonsils and of the soft palate, which are covered with a dirty, offensive exudate. The process rapidly goes on to partial destruction of the affected portions of the throat. After the necrotic fragments of tissue have been cast off, recovery is still possible, although permanent defects remain in the tonsils and on the palate. Extensive necrotic destruction sometimes, even in the absence of sepsis, causes death from parenchymatous hemorrhages or the erosion of large blood-vessels. Aside from these findings, scarlatinal diphtheria is characterized by an offensive and carious odor from the mouth, edema of the skin of the cheeks, ulceration and rhagades of the lips, and dryness of the tongue.

The nasopharyngeal space is almost always involved along with the pharyngeal cavity in scarlatinal diphtheria; the nasal passages are swollen, discolored and hemorrhagic, and the upper lip eroded by the acrid nasal discharges. The involvement of the lymph glands at the angle of the jaw in scarlatinal diphtheria is often so severe that the entire neck may be occupied by a tumor of board-like hardness, which not only prevents the child from opening its mouth, but also interferes with respiration, almost to the point of asphyxia.

These cases then present the terrible picture of the most severe grade of sepsis with profound hebetude.

The temperature usually attains an alarming elevation; the pulse is greatly accelerated and feeble and soon becomes

arhythmic; the symptoms of cerebral or pulmonary edema develop; and after a duration of days or weeks the disease ends in death.

To avoid any misunderstanding it seems not unimportant at this point to mention emphatically that this severe disease, which is designated scarlatinal diphtheria, is not identical with genuine diphtheria and owes its origin to a mixed infection with streptococci. Genuine diphtheria may also, although rarely, occur as a severe complication of scarlet fever, and in such cases the clinical picture is dominated by the typical affection and its sequelæ.

Even the mildest attack of scarlatina may be followed by various *complications*, which are often quite unexpected and exert an unfavorable influence on the prognosis and course of the disease.

First of all may be mentioned destruction and permanent defects in the oral or pharyngeal cavity, which sometimes follow a favorable case of scarlatinal diphtheria, and necrosis or suppuration of phlegmonous glands in the skin or in the neck, which not infrequently takes place. The oral affection is but too frequently followed by purulent otitis media, and, as a result of the bacteriemia, by purulent inflammation of the pleura, pericardium and endocardium, or peritoneum, and sometimes by metastatic purulent inflammation in joints. In the beginning or toward the end of the second or third week the temperature often rises again even in cases which at first presented no complications; the glands in the neck enlarge a second time; rheumatic pains develop in some of the joints or in the sheaths of tendons; and, finally, nephritis may develop—a complication which in many epidemics is more frequent than any other.

It follows, therefore, that even when the disease is apparently running a smooth course the possibility of some complication developing must be borne in mind and receive due recognition in the management of the case. It is especially important that the urine be examined every day, because the onset of a nephritis does not always reveal itself by diminution and hemorrhagic discoloration of the urine.

As the disease presents so many surprises in its mode of occurrence and in its course, measures to *prevent spreading* of the infection are of the utmost importance. In many cases prevention will prove impossible, especially among school-children, until a law is passed to close schools and kindergartens as soon as a single case develops.

To prevent the spreading of the disease to healthy persons we have a number of precautionary measures at our disposal, and these precautions should be strictly observed. The most important of these is strict isolation of the patient, which must include also the nurse or attendant. The sick-room should be large and airy, and all articles of upholstered furniture, rugs, and curtains should be removed; if possible the adjoining room should also be placed at the patient's disposal. The temperature of the room should not exceed 15° R. (65.7° F.), and the air should be frequently renewed by opening the windows either in the sick-room itself or in the adjoining room. The floor should be wiped up daily with a 5 per cent. solution of lysol, and the patient's and attendant's soiled linen should be soaked for at least two hours in the same solution.

In order to protect the clothing from contact with the patient, both the attending physician and the nurse should wrap themselves in a linen cloth or put on a washable linen duster, and after leaving the sick-room wash both hands and face with lysol, corrosive sublimate, or chinosol, and, if a change of footgear is not feasible, the soles of the shoes should be cleansed by wiping them on a mat saturated with a 10 per cent. solution of lysol. The bed should be accessible from both sides, and the covering sufficient to keep the patient moderately warm. Both body- and bed-linen should be changed frequently, and the patient's body kept absolutely clean.

The actual *treatment* of scarlet fever has for its object to keep down the fever as much as possible and, if necessary, to maintain the strength of the heart.

The fever may be controlled by sponging at short intervals or applying a wet pack with cloths wrung out of fresh well-

water or water of the temperature of 15° R. (65.7° F.), every ten minutes to one-quarter or one-half hour. Under certain conditions, depending on the course of the disease, lukewarm baths or baths in which the temperature is gradually lowered, given several times a day, have a favorable sedative effect.

If there is headache or stupor, ice compresses or Leiter's coils are applied to the head; and if there is much sore throat with secondary swelling of the glands, cold compresses are applied to the throat.

Every individual symptom, whether primary or secondary, demands suitable treatment, for a more detailed description of which the reader is referred to the respective headings.

Moser has recently recommended a streptococcus serum obtained from horses that have been injected with cultures of streptococci isolated from the heart's blood of scarlet-fever cadavers. Favorable results have been reported after the use of large quantities of serum, but opinions in regard to the use of the method are not decisive.

In order to prevent severe angina as much as possible, and especially the occurrence of scarlatinal diphtheria, one of the following solutions should be ordered, either as a gargle or a spray to the throat: 2 per cent. boric acid, ½ per cent. salicylic acid, 1 to 3 per cent. carbolic acid, $\frac{1}{10}$ per cent. bichlorid of mercury, or 1 to 2 per cent. chinosol.

As soon as a diphtheritic exudate is discovered, the affected parts must at once be treated with a solution of 1 : 1000 bichlorid of mercury or a 2 per cent. solution of boric acid, or sozo-iodolnatrium may be insufflated. Another treatment consists in the systematic injection of 1 c.c. of a 3 per cent. solution of carbolic acid into the tonsils and tissues of the soft palate once a day. The injection is administered with a Pravaz syringe having a detachable cannula about 6 c.c. in length, which is protected about ½ c.c. below the point by a small disk, so that the needle cannot enter the tissues too deeply.

Except in those cases in which the severity of the disease leads one to dread the occurrence of heart failure, alcoholic and other stimulants may be dispensed with. From the be-

ginning of the disease until the end of the third week a strict *diet* should be enforced. This consists of milk with a little cocoa or malt-coffee, if desired; dishes prepared from milk, wheat bread, and later thick chicken- or veal-broth (bouillon). After the third week, if the urine is normal, light meat, custards, green vegetables, eggs, and later a little dark meat may be permitted.

As soon as the temperature has come down permanently, the patient receives a bath every day, but must be put back to bed after the bath. In order to hasten desquamation, the skin is well rubbed during the bath with some disinfecting soap, formalin- or lysoform-soap or Schleich's marmorseife. A few tablespoonfuls of lysol, lysoform, bacillol, or a bichlorid tablet should be added to the bath.

A convalescent from scarlet fever should not be allowed to associate with other children before the end of the sixth week, and then only if desquamation is complete. Before the child is allowed to resume its ordinary intercourse, the rooms must be disinfected with formalin, and all the clothing and other articles that have been used during the illness either destroyed or disinfected.

As the first attack of scarlet fever does not always confer absolute immunity, prophylactic precautions, especially as regards isolation, must be enforced even in the case of children who have already had the disease.

Schultze's Method of Artificial Respiration.—This is used to resuscitate asphytic (stillborn) children, and is performed as follows: The operator places his thumbs on the anterior surfaces of the shoulders and introduces the index fingers from behind into the armpits, the remaining fingers supporting the child's back and the head being held firmly between his two wrists. To induce the first expiration, and thereby expel any mucus that may be contained in the respiratory passages the child's body is carried upward with the sweep of the arms while the head is directed downward; this is followed by a forcible downward movement, so that the infant's body resumes its original position, whereby a vigor-

ous inspiration is effected (see Fig. 129). After these movements have been repeated eight or ten times the child should be placed in a hot bath, but if the asphyxia continues the movements must be repeated.

Scleredema Neonatorum.—The name itself indicates the essential feature of the disease, which consists in infiltration of the skin and saturation of the subcutaneous tissue with serum. Scleredema usually begins during the very first days of life and first makes its appearance in the calves of the legs,

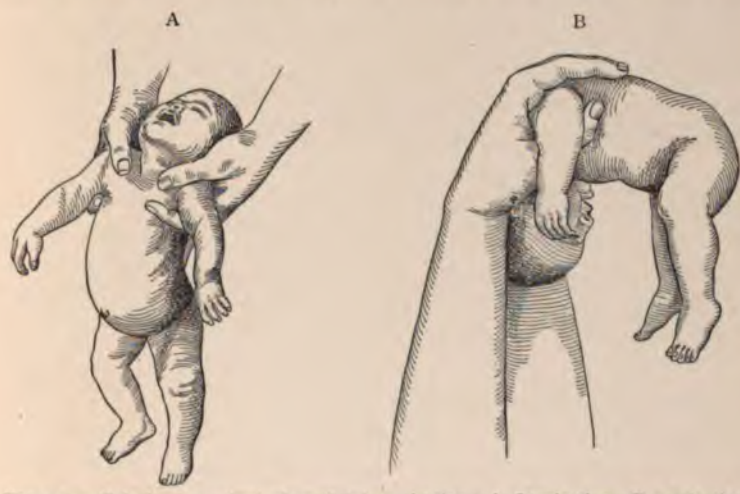


FIG. 129.—Schultze's method of artificial respiration: A, Inspiration; B, expiration (Hirst).

spreading from that region to the lower extremities, genitalia, and abdomen as far as the navel. As a rule it also appears in the face, to which it gives a red, glistening appearance. The progress of the disease is attended by a continuous fall in the temperature. The skin is cold, often tightly stretched, and the color may be a glistening white or sometimes icteroid or marbled.

The pitting produced by pressure with the finger persists for some time. The *causes* of the condition are premature birth, fetal heart lesions, and insufficiency of the cardiac and respiratory functions.

The temperature continues to fall, the heart and respiration become progressively weaker, and death usually occurs, preceded by increasing collapse. In rare cases the child may improve slowly, but the infiltration often persists for some time in some of the originally affected portions of the skin.

The chief indication for *treatment* is met by securing a constant supply of heat as soon as possible, and this is accomplished in the same way as in the case of premature children (see INCUBATORS). The question of feeding is likewise a difficult one and must be carried on according to the methods described under the same head (see DEBILITAS VITÆ). These measures must be kept up until the body-temperature continues to remain normal. Stimulants are prescribed internally, and in order to promote absorption, dry warm rubs and, later, massage should be ordered (see SCLEREMA ADIPOSUM).

Sclerema Adiposum.—As a result of capillary congestion and a marked fall in the temperature in association with cardiac weakness, and after extensive loss of fluid, especially in cholera infantum, the skin and subcutaneous cellular tissue sometimes undergo hardening. The condition is found chiefly in young infants. The skin is cool and pale and does not pit on pressure, nor can it be pinched up in folds. The mucous membrane of the mouth is dry, the muscles are rigid, and in severe cases the entire body, especially the extremities, presents a board-like rigidity, so that the child lies almost immovable.

The *cause* of this disease is believed to be the lower percentage of olein in the fat of newborn infants as compared with that of older children; hence fat-sclerema is practically never observed in older children.

As the condition follows collapse in acute intestinal diseases, the *treatment* to be employed will be found in the sections devoted to those diseases.

[It is necessary to distinguish two forms of sclerema adiposum: one occurring very soon after birth and due to solidification of the subcutaneous fat, as indicated in the text; the other resulting secondarily from a drying-out of the sub-

cutaneous tissues following an excessive drain of the fluids of the body, in young infants, such as occurs so typically after true cholera infantum, and after severe enterocolitis, or other exhausting diseases. In the first class of cases the *prognosis* is grave, but when the hardening affects only portions of the body, recovery may occur under the use of artificial warmth, gentle massage, and general hygienic care. In the second class of cases, in which this condition is usually a forerunner of dissolution, artificial heat, hypodermoclysis, free stimulation, and other measures addressed to the primary disease, may in rare instances be successful.—ED.]

Scorbutus. See PURPURA.

Scorbutus Infantilis. See SCURVY, INFANTILE.

Scrofulosis.—This is usually an *inherited*, constitutional disease which does not, as a rule, manifest itself until the later years of childhood. Scrofulosis presents certain *symptoms* which are typical in their occurrence and frequently recur, and the disease prepares the soil for the development of local or general tuberculosis.

Aside from predisposition, which is undoubtedly inherited, unhygienic dwellings, improper food, and grave diseases generally, may give rise to scrofulosis.

In its external manifestations the disease presents a many-sided picture, although all scrofulous patients exhibit a certain characteristic fundamental type. As a rule the child is pale and of a pasty color, the abdomen is distended, the nose is best described as shapeless, the nasal passages are the seat of eczema, the upper lip is thickened and marked with fissures, the mouth is held open, and the teeth early become carious. In addition to these characteristic symptoms, which may often be recognized at the first glance, scrofulosis is attended by various diseases of the external skin, the mucous membranes, and the bones.

The cutaneous lesions include all forms of chronic impetiginous eczema, lichen and ecthyma-ulcers, and circum-

scribed infiltrations of the skin covered with a fine, bluish layer of epidermis (scrofuloderma), which sometimes undergo spontaneous ulceration with the destruction of large areas of skin and, after they have healed spontaneously, leave a stellate scar.

Almost all the mucous membranes may be attacked by scrofulosis; but the disease manifests itself chiefly in affections of the conjunctiva and cornea; protracted blepharitis with a tendency to hordeolum; loss of the eyelashes; catarrh of the nasal mucous membrane (rhinitis, **ozena scrophulosa**); chronic pharyngeal catarrh or hypertrophy of the palatal and pharyngeal tonsils and of the adenoid follicles of the tongue and pharynx; chronic catarrhal affections of the respiratory organs and sometimes of the digestive tract. In this way the bronchial or mesenteric glands become enlarged (see under the respective headings).

Children of a scrofulous disposition develop glandular enlargement, especially of the cervical, postcervical, and submaxillary glands, either primarily or secondarily to the above-mentioned local diseases. The enlarged glands are at first painless and movable; if the enlargement persists, however, they suppurate or undergo caseation and may rupture spontaneously with the formation of a skin fistula or extensive subcutaneous ulcerations. If spontaneous recovery takes place, stellate, glistening, disfiguring scars usually remain at the seat of the diseased gland.

The diseases of the osseous system that occur in scrofulosis often present characteristic features, such as thickening of individual phalanges (**spina ventosa**), with bluish discoloration of the skin, caries of the vertebræ, chronic inflammation of joints, or the formation of a white swelling (**tumor albus**). (See also under the headings of TUBERCULOSIS and SPONDYLITIS TUBERCULOSA.)

Owing to the ever-present danger of tuberculosis developing as a complication, the *prognosis* of scrofulosis is always doubtful, and also depends largely on the patient's circumstances and the ability to carry out the necessary hygienic, dietetic, and therapeutic measures persistently. For prophy-

lactic reasons children of scrofulous or tuberculous parents should, if possible, be fed on breast milk or most carefully prepared artificial food.

The hygienic surroundings must be corrected by improving or, if necessary, ordering a change of residence. The bedroom should be large and sunny; the air must be frequently renewed and kept free from dust by wiping the floor every day with some disinfecting fluid.

Damp quarters, especially in newly built houses, are particularly dangerous: such a house should not be inhabited until it is thoroughly dried out.

The child must be accustomed to spending a good deal of time in the open air, and this must be insisted upon except when the weather is bad. In any case the air of the room must be frequently renewed by leaving the windows open. If there is a tendency to disease of the respiratory organs, this open-air cure must be somewhat restricted. A similar precaution must be observed as regards diet, if there is a tendency to disease of the digestive organs. The *diet* should be of a mixed kind with a preference for albuminous substances, especially milk, dishes prepared with milk, broiled meat, eggs, fresh green vegetables, fruit, and easily digestible fats, such as butter, bacon, and bone-marrow. The carbohydrates, especially fresh bread and potatoes, and all foods rich in sugar, must be restricted as much as possible, although, unfortunately, the patients exhibit a special fondness for such articles. All kinds of leguminous vegetables in the form of purées, or, if there is a tendency to dyspepsia, in the form of the finely ground and dextrinized leguminous flours of Knorr, Hartenstein, Timpe, or Liebe, given either as a porridge or in meat broth, are to be recommended. If there is a tendency to diarrhea, the milk should be prepared with cocoa, acorn-coffee, or acorn-cocoa.

In excitable children (**erethistic habitus**), milk, and dishes prepared with milk, and an abundance of fat, especially butter, should be given the preference, while meat must be restricted; children who are physically and mentally phlegmatic (**torpid habitus**), on the other hand, should be fed chiefly

on meat and not so much fat, although eggs, fruit, and even wine in small quantities may be allowed.

The care of the *skin* must not be neglected in scrofulosis; in addition to daily ablutions to harden the body the child should be given a bath several times a week.

Salt baths containing 5 to 10 per cent. of salt at a temperature of 32° to 35° C. (89.6–95° F.) are to be preferred; when the percentage of salt is low, the temperature of the bath should be higher than would be proper for a more concentrated bath. The duration of the bath in the beginning of the treatment should not be over ten minutes; later it may be extended to thirty minutes and more. Young children should be given 15 to 20 baths, older children as many as 30; that is to say, torpid children are made to take a bath every day, while erethistic patients at first are given a bath only every other day, and even later in the course of the treatment a day's rest is allowed after every third or fourth bath. For home use, Dr. Sedlitzky's brine-bath tablets, consisting of Halleiner Mutterlaugensalz and common salt, are very convenient. As each tablet corresponds to 5 L. (quarts) of natural brine, 1 to 4 tablets are ordered for each bath. When the skin is sensitive the body may be rinsed with warm water, or ¼ kg. (½ pound) of soda may be added to the brine-bath.

In the torpid form of scrofulosis oakbark-baths are also much in vogue. From 1 to 2 kg. (2–4 pounds) of oakbark are boiled in a few liters (quarts) of water and allowed to digest for about an hour, after which the mixture is filtered and the filtrate added to the bath.

In addition to the brine-baths, which are given at home, sea-baths are frequently prescribed. The effect of these baths depends not only on the salt-water bath itself, but also on the action of the sea air or sea climate. The greater abstraction of heat also increases metabolism and stimulates the appetite. Sea-baths also undoubtedly influence absorption and are therefore greatly to be recommended for scrofulous children who already suffer from local diseases.

The following sea-baths may be recommended in all cases of scrofulosis. On the Mediterranean: Biarritz, Cannes,

Dieppe, Etrétat, Trouville, Mentone, Nizza, San Remo, Spezia, and Viarregio; on the Adriatic: Grado, Lussin, Porto Rose, Abbazia, and the seaside sanatoriums at St. Pelagio, Rovigno, and Triest; on the Baltic: Sassnitz, Ahlbeck, Swinemünde, Heringsdorf, Misdroy, Dievenow, Colberg, Heiligendamm, and Zoppot. On account of the heavy surf and the low temperature the bathing resorts on the North Sea, Wyk, Amrum, Norderney, Borkum, Büsum, Blankenberghe, Scheveningen, Ostend, Helgoland, Sylt, and Zandvort, are suitable only for patients with good resistance.

Brine-baths can be had at Kissingen, Homburg, Salzschlirf (Hessen-Nassau), Soden in the Taunus, Berchtesgaden, Hall (Tirol); brine-baths containing iodin and bromine at Aussee (Steiermark), Hallein (Salzburg), Ischl and Ebensee (Upper Austria), Kreuznach (Rheinprovinz) and Reichenhall (Bavaria). The most famous iodin waters are found at Hall (Upper Austria), Darkau (Silesia), Krankenheil Tölz and Heilbrunn (Upper Bavaria), and Lipik (Slavonia). These specific bathing-cures may also be advantageously combined once a year for from four to six weeks with a drinking-cure of the same waters, 1 to 3 wineglassfuls with a little sugar or milk to correct the taste. If there is a tendency to chronic, obstinately recurring bronchial catarrh, iodin springs are not to be recommended. Drinking-cures of sodium-chlorid waters and, in cases of obstinate scrofulous bronchitis, of simple alkaline mineral waters, such as Bilin, Giesshübl, Preblau, Salzbrunn (Silesia), or alkaline muriated waters, such as Gleichenberg (Steiermark), Luhatschowitz, Selters, Ems (on the Lahn), are also employed.

Internally, cod-liver oil still holds its place as the sovereign remedy in scrofulosis, especially of the erethistic type. It may be given several times a day in tablespoonful doses (for small children 1 to 3 teaspoonfuls), either pure or in the form of one of the numerous emulsions that are in the market (see RACHITIS); or if there is insuperable aversion to the taste of cod-liver oil, oil of sesame, lipanin (fine olive oil with 6 per cent. of oleic acid), or the lecithol and lecithin preparations (Riedel, Clin).

When there is a well-founded suspicion of tuberculosis, the above-mentioned remedies are combined with creosote, creosotal, duotal, thiocol, or guaiacol carbonate, in the dose of 2 to 5 gm. (30–75 gr.) in 100 c.c. (3 fl. oz.) of cod-liver oil, 1 or 2 teaspoonfuls two or three times a day.

In older children hetol in the form of hetol-sanguinal pills (0.001 gm.—$\frac{1}{67}$ gr. of hetol), at first one and later up to three pills a day, also acts favorably.

In many cases of scrofulosis the use of iodin preparations is justifiable. They may be prescribed with cod-liver oil as iodized cod-liver oil, or ferro-iodized cod-liver oil, Lahusen's iodin-iron-cod-liver oil, in the same dose as cod-liver oil itself, or as saccharated iodid of iron, two to three times a day, 0.03 to 0.05 gm. ($\frac{1}{2}$–$\frac{3}{4}$ gr.) for children in the second half-year of life; in the third year of life, up to 0.40 gm. (6 gr.) per diem. In the presence of obesity, when cod-liver oil is not indicated, the syrup of the iodid of iron (for small children up to 5 drops, and for older ones up to 20 drops), two or three times a day; and, finally, iodinferratose, 2 to 4 teaspoonfuls a day, may be given.

Diseases of the skin and of the visible mucous membranes must receive the *treatment* laid down for such affections under their respective headings. When there is a scrofulous disease of the eyes (*vide*), daily insufflations of calomel and Pagenstecher's ointment—yellow oxid of mercury, 0.04 to 4 gm. ($\frac{3}{5}$ gr. to 1 dr.)—are indicated. Instead of the yellow precipitate ointment, the white, in the strength of 2 to 5 per cent., may also be used, particularly for eczema of the nasal passages and of the labial mucous membranes.

Scrofulous enlargement of the lymph glands sometimes disappears without any local treatment; but in many cases absorption must be encouraged by the application of lead acetate, aluminum acetate, 1 to 4 parts of water, or iodin water compresses; or, if tuberculosis can be excluded with some probability, by inunctions of iodin and potassium iodid ointments:

℞ Iod. puri, 0.1 (gr. iss);
Kali iod., 2.0 (gr. xxx);
Vasel. et lanol., āā 15.00 (℥ss).—M.;

by painting with tincture of iodin, 6 to 10 per cent. iodovasogen, ichthyol 1 : 5 of glycerin; or, finally, by the inunction of 5 to 10 gm. (1–2½ dr.) of salocreol, administered once or several times a day.

The systematic employment of the soft-soap cure has an astonishingly favorable influence, not only in reducing the size of the lymph glands, but also on the affections of the bones and joints.

In the presence of scrofuloderma, suppurating or caseous glands and bone affections, surgical intervention is sometimes necessary, and in the former conditions may prevent the formation of disfiguring scars.

Whenever there is the slightest suspicion of scrofulosis every effort should be made to send the child to the country, to the mountains, or to the seashore, if there is any way of doing so. If the child is poor it should, if possible, be admitted to a sanatorium, or at least given an opportunity to join a vacation colony [Childrens' Country Week].

Scurvy. See PURPURA.

Scurvy, Infantile (*Acute Hemorrhagic Rachitis; Barlow's Disease*).—It is only during the last few decades that this disease has been accurately observed and described. In many countries (as, for example, in Austria) it is extremely rare. The characteristic *signs* are hemorrhages beneath the periosteum, especially of the long bones, and more rarely into the intestine or the kidneys, or in the form of multiple cutaneous hemorrhages, with secondary anemia.

If the child has cut teeth, sponginess and bleeding of the gum about these teeth, either alone or in conjunction with other evidences of hemorrhage, is a very characteristic *symptom*. The disease usually attacks children before the end of the second year. Previous to the onset of acute *symptoms* nothing but pallor of the skin may be noted for some time, and then more or less suddenly the characteristic symptoms begin with fever, usually slight, and tenderness in the lower extremities, elicited by any attempt to move them; the legs

above the ankles and knee-joints become swollen and very tender, but the skin covering the swelling remains normal and free from redness. The gums around the erupted teeth are purplish, swollen, and bleed at the slightest touch; and other hemorrhages, as noted, may occur.

The *etiology* of the disease is still in doubt. It appears to be related on the one hand to rachitis and on the other hand to intestinal intoxication or the scorbutus of adults. Usually the children have been fed with artificial foods or sterilized milk mixtures. Oversterilized milk especially appears to favor the occurrence of the disease.

If the condition is recognized and treated in time, the *prognosis* is usually favorable, although months may elapse before recovery takes place.

The *treatment* consists in pure or suitably diluted pasteurized or even unboiled milk derived from a source which must be above suspicion.

In older children an antiscorbutic diet, consisting of fresh green vegetables, the juice of lemons, oranges or apples, and broths, is prescribed.

The swollen extremities are treated with compresses of vinegar water or a solution of aluminum acetate, in the strength of 1 : 4, with elevation of the diseased limb; the bleeding gums should be painted with fresh lemon juice several times a day. In addition to these dietetic and therapeutic measures the child should be kept in the open air as much as possible.

Seatworms. See INTESTINAL PARASITES.

Seborrhea.—The term **seborrhœa oleosa** is used when the condition consists in excessive excretion of fat from the sebaceous glands, so that the body is covered with an oily exudate; when the oily exudate dries out and mixes with desquamated epithelial cells to form scales and crusts, the condition is designated **seborrhœa sicca** or **squamosa**. The latter is observed very frequently on the scalps of neglected infants in the form of extensive, dark-brown scaly masses,

which owe their color to the presence of dust and dirt. These crusts may coalesce and thus a large portion of the head may be covered by a thick scaly plate, which emits a most unpleasant odor, owing to the disintegration of the fatty acids and the purulent secretion from the macerated skin.

Treatment.—First of all the crusts must be removed by applying emollient oil-compresses. As soon as the layers of filth begin to loosen they must be removed mechanically, or, if on the head, with the aid of a fairly coarse comb, after which the head is thoroughly cleansed with soap or tincture of green soap and lukewarm water. The macerated scalp must then be treated with one of the following ointments until the appearance of the skin, which at first is inflamed and covered with a serous exudate, has resumed its normal aspect.

For this purpose either Lassar's paste or a 1 to 2 per cent. ointment of white or yellow mercurial precipitate is usually selected, or the following:

℞	Zinc. oxid.,	6.0 (ʒiss);
	Sulfur. præcip.,	4.0 (ʒi);
	Bol. alb.,	2.0 (ʒss);
	Adip. benz.,	28.0 (ʒvii).—M.

After the seborrhea has been cured the dryness of the scalp frequently calls for an ointment, for which purpose the following may be recommended:

℞	Acid. salicyl.,	2.0 (ʒss);
	Ol. olivarum,	100.0 (f ʒiij).—M.
Or,		
	Thymol,	0.10 (gr. iss);
	Ol. olivar.,	
	Aq. calc.,	āā 50.0 (f ʒiss).—M.

Septic Infection of Newborn Infants and Infants at the Breast.—The child in utero may become infected with a great variety of virulent germs, which may enter through the placenta when the mother is suffering from some infection; or infected amniotic fluid may be aspirated during intra-uterine life.

In the majority of cases, however, infection with septic material is probably *due* to some external injury. The virulent microbes are in part derived from the air, in part from the food, and in part from the purulent lochial discharges of the mother. The most important factors in pollution of the air are unhygienic conditions, both in private dwellings and in hospitals.

One of the most frequent starting-points of a septic infection is the umbilicus and, next to this, the external skin and the mucous membranes. Finally, septic processes may follow in the wake of a great variety of diseases associated with gangrene or abscess-formation, phlegmonous or erysipelatous affections, or even furunculosis.

The *diagnosis* of septic infection can probably never be made with absolute certainty, except in those cases in which the starting-point of the process can be found and the consecutive phlegmonous or erysipelatous disease can be clearly demonstrated. In the cases described as cryptogenetic the diagnosis is difficult. In these cases the *clinical picture* is dominated by grave disease of the lungs or of the digestive apparatus, attended by high fever, collapse, and icteric discoloration of the skin.

Subacute or chronic cases often exhibit a typical remittent fever, mild jaundice, erythema or petechial hemorrhages into the skin, a great variety of metastases, and sometimes enlargement of the spleen.

The *prognosis* of septic infection in infancy must be determined by the age, the virulence of the infection, and the severity of the clinical course.

When septic disease has declared itself, the fever must be controlled as much as possible by means of hydropathic procedures; if the infant is young it should be fed on the breast, and the strength of the heart maintained by the administration of stimulants. Although the *treatment* is usually hopeless, *prophylaxis* is of the utmost importance (especially in newborn infants).

Serous Meningitis. See MENINGITIS, SEROUS.

Shingles. See HERPES ZOSTER.

Sinus Thrombosis.—Thrombosis of the longitudinal sinus, and more rarely of the sinus cavernosus or transversus, is occasionally **primary**, and is then known as marantic thrombosis, and *follows* severe diseases, especially acute intestinal catarrh in infants, and is a contributory cause of death.

Secondary sinus thrombosis develops on an infectious base, and the *causes* are found either in disease of the cranial bones, usually following purulent otitis media, or in pyemic and metastatic processes in the course of an infection, such as erysipelas, scarlet fever, variola, pneumonia, or in other phlegmonous septic conditions.

Except in marantic thrombosis, in which the exhaustion is too great to permit of a rise in temperature, fever is almost always observed in the secondary forms and exhibits the characteristic curve of pyemia. If, in addition, there are disturbances of consciousness, somnolence, unilateral and bilateral convulsive states or palsies of the extremities, of the eye-muscles, or of the facial muscles, and visible dilatation of the veins of the head, or edema behind the ears, in the face, or in the eyelids, thrombosis of one or all the sinuses of the dura mater may be suspected.

The *prognosis* of the disease can be deduced from the causal conditions, which are always grave. There is no special *treatment* aside from measures to combat the fever, the weakness and the convulsions, except in those cases in which the condition is due to a purulent otitis media, when operative intervention in the form of trephining of the mastoid process is called for. (See EAR, DISEASES OF.)

Skin, Inflammation of. See DERMATITIS.

Skin-navel. See UMBILICUS, DISEASES OF.

Small-pox. See VARIOLA.

Soft-soap Cure.—The value of this method of *treatment*

can hardly be exaggerated in scrofulosis and in tuberculosis of the joints and bones and in the presence of exudate in the pleural cavity or in the abdomen. Officinal soft-soap or **sapo kalinus** is employed. Every evening, or every other evening, from a teaspoonful to a tablespoonful of the soap, either alone or mixed with a little water to the consistency of a paste, is rubbed into the skin of the chest and back alternately for from ten to fifteen minutes with a woolen rag or with the palm of the hand, and after from one-quarter to one-half an hour the soap is washed off with a little lukewarm water. If the skin shows any signs of irritation where the soap has been rubbed in, it must at once be treated with a dusting-powder, and a different part of the body selected for the subsequent inunctions.

Spasmodic Croup. See LARYNGITIS, ACUTE CATARRHAL.

Spasmodic Laryngitis. See LARYNGOSPASM.

Spasmus Nutans (*Nodding Spasm*).—This affection must be regarded as a neurosis and consists of spasm involving chiefly the sterno-cleido-mastoid muscle and the rotators of the head, causing rhythmic movements of the head either in a horizontal or a vertical direction, which are sometimes associated with unilateral or bilateral nystagmus and occasionally with strabismus.

The disease is comparatively benign, and must be distinguished from a group of cases which are included under the term **eclampsia nutans** or "salaam-spasm" and depend on profound pathologic changes in the brain or grave disturbances of the nervous system (hysteria). In the latter cases the entire body or the trunk sometimes participates in the spasmodic movements.

During sleep or when the patient's attention is distracted, or sometimes when one or both eyes are bandaged, the nodding spasm disappears temporarily.

The *etiology* is not known. In most cases rachitis, living in dark rooms with an insufficient light-supply, or a nervous

heredity is found. The *treatment* consists in combating whatever primary trouble is discovered, but in many cases even the removal of the primary cause has no material influence on the course of the neurosis. *Recovery* may take

FIG. 130.—Wry-neck (*caput obstipum*) in a child two years of age, the result of *spasmus nutans* of several months' duration.

place after several months, as a rule spontaneously, or the condition may become permanent.

Spastic Diplegia or Paraplegia. See LITTLE'S DISEASE.

Spastic Spinal Paralysis.—The *etiology* of this disease, as well as the *symptom-complex* in many cases, is practically the same as has been discussed in connection with Little's disease (*vide*).

The degenerative changes in the lateral pyramidal tracts, which produce spastic spinal paralysis, may develop gradually and lead to spastic palsies with secondary contractures, especially in the lower extremities. The disease in such cases manifests itself by exaggeration of the tendon reflexes

and a suddenly increasing spasticity of the gait. Sensation is preserved, and neither atrophy of the muscles and bones nor disturbance of the intelligence develops. The *treatment* is based on the principles mentioned under the heading of LITTLE'S DISEASE.

Spina Bifida (*Hydrorrhachis*).—A congenital malformation consisting in a tumor in the lumbar, sacral, or, rarely,

FIG. 131.—Spina bifida in a child four weeks of age with paralysis of the legs, bladder, and rectum. There are also supernumerary toes.

thoracic segment of the vertebral column (see Figs. 131, 132). The condition is rare and is *due* to the presence of a cleft in the vertebral arches or spinous processes (hence the term **spina bifida**). The deformity may be limited to the presence of a cleft (rhachischisis), or the meninges may protrude through the cleft (**spinal meningocele**), or, finally, the hernia may consist of both meninges and cord tissue (**spinal meningomyelocele**). In the most advanced form of this anomaly a cystic dilatation of the central canal (**myelocystocele**) is produced.

The *diagnosis* of this rather rare condition usually presents

no difficulties. Paralysis of the lower extremities and nervous disturbance of micturition and defecation are frequent in spina bifida, and the condition is often associated with other malformations, such as clubfoot, exstrophy of the bladder, cerebral herniæ, etc.

FIG. 132.—Hydrorrhachis in a newborn infant.

The *treatment* is purely operative and is sometimes successful.

Spinal Marrow, Inflammation of. See MYELITIS.

Spinal Meninges, Hemorrhage into. See HEMORRHAGE INTO THE SPINAL MENINGES.

Spinal Meninges, Inflammation of. See MENINGES, SPINAL, INFLAMMATION OF.

Spinal Paralysis, Infantile. See PARALYSIS, SPINAL.

Spinal Paralysis, Spastic. See SPASTIC SPINAL PARALYSIS.

Spondylitis Tuberculosa (*Tuberculosis of the Vertebræ*).

—In view of the fact that the *diagnosis* in the early stages is difficult and the disease may be mistaken for a rheumatic affection, neuralgia, gastro-intestinal disease, or rachitis, the following description of the *symptomatology* of spondylitis, taken from a monograph by Hoffa, is here reproduced:

"The beginning of spondylitis presents two main symptoms, pain and contractures. The pain at first is not referred to the vertebral column, being usually felt as a girdle pain, or as pains radiating into the lower extremities. It is described as a dull pressure, not superficial, but deep, increases with the pulse-beat, especially after eating, and annoys the patient less by its intensity than by its persistence. Very small children betray the fact that they are suffering by the expression of the face, by refusing food, and by the fact that they whimper at the slightest movement when they are being changed and bathed. Other children usually complain of pain in the abdomen or in the breast and limbs, increased by coughing, sneezing, laughing, and all other expiratory movements. Pain radiating to the head of the penis and into the bladder also occurs, and sometimes lancinating pains, like those of tabes, are observed. The pain occurs particularly at night and causes sleeplessness, or it rouses the child soon after it has gone to sleep, so that it wakens with a loud cry, but at once goes to sleep again. Sometimes the pain is so severe that even the pressure of the bedclothes becomes intolerable. In beginning spondylitis of the lumbar vertebræ the patients complain of pain on sitting down, but not in a standing position, because the act of sitting down is accompanied by a backward kyphotic curve of the lumbar vertebræ and thus throws a greater weight on the diseased bones. Pain of this kind must receive immediate attention. If the child refuses to walk or stand at the usual time, or if it refuses to walk after it has once begun; if a child that is usually jolly and cheery becomes peevish and will not play; if without any apparent cause it complains of girdle pains or pain in the stomach or sacral region, a thorough examination must be made after removing all the clothing, when a peculiar attitude of the trunk, the second main symptom, at once

becomes apparent. This is due to the effort of the patient to hold the diseased vertebral column as rigid as possible, in order to avoid any kind of movement. Children who have not begun to walk assume an unnatural, motionless position in bed and cry out whenever an attempt is made to take hold of them or make them sit up. To get out of bed they turn on one side, prop themselves on one arm, and with the other seize the railing and thus draw themselves up to a standing position. Older children, when made to stand up, assume certain characteristic attitudes, because they reflexly contract certain muscles in order to relieve the diseased portion of the vertebral column from pressure. Thus, when the cervical portion of the vertebral column is diseased, the head is inclined forward or held to one side, simulating the picture of torticollis (Fig. 133); when the lower portion of the vertebral column is affected the entire trunk very often deviates to one side, so that an actual scoliosis is observed, with one shoulder higher than the other and distortion of the trunk; when the lumbar column is affected, the child is apt to bend over backward until the trunk seems to be in danger of falling over backward. The vertebral column is held as rigid as possible, so that the gait is often somewhat stiff, because the child sedulously avoids any movement that may produce pain. If asked to perform some active movement he holds the back as stiff as possible in doing so. The act of stooping is particularly characteristic in this respect; the knee- and hip-joints are bent as much as possible, while the vertebral column is held perfectly straight; thus, in getting up after picking up something that has fallen to the ground the patient keeps the knees strongly flexed, seizes the thighs with both hands,

FIG. 133.—Characteristic attitude of the head in cervical spondylitis.

gradually raises the trunk by successively changing the hold on the thighs, and then finally extends the knee-joints ('climbs up on himself').

"If the child can be induced to bend the vertebral column it is observed that the entire column does not take part in the movement, as under normal conditions, by a uniform separation of the individual spinous processes, but that movement takes place only in the sound portions of the column, and the spinous processes of the diseased portion remain firmly fixed in apposition. This fixation of the trunk with muscular rigidity in itself suffices to establish the *diagnosis* if, as sometimes happens, pain is absent. In such cases pain can be elicited by the physician, but this must, of course, be done as gently as possible. All that is sometimes required is to pass the finger over the spinous processes, or they may be touched with a sponge saturated with hot water. The electric current is a more delicate aid in establishing the diagnosis; a mild current is used, and, with the cathode applied to the epigastrium, a large soft sponge-electrode, which represents the anode, is slowly and uniformly carried up and down the back on the spinous processes. In this way a distinct painful sensation is elicited over the diseased spot. At the most it may be permissible to test the suspicious spot with one or two sharp blows delivered with the tip of the finger.

"Faithful observation of these rules will enable one without much difficulty to make an early diagnosis of beginning spondylitis and will guard against the danger of confusion, as, for example, with ordinary growing pains, which are not associated with fixation of the back and disappear after a few gymnastic exercises for the vertebral column; or with rheumatic arthritis of the small cervical vertebræ, which may also occur in children, but usually develops suddenly with fever and in most cases is unilateral, so that the body assumes an oblique position. The pain here is not in the spinous processes, but at the level of the articular processes. Lumbar spondylitis can also be distinguished from painful rheumatic kyphosis, because the line of the spinous processes

in the latter is usually curved instead of angulated, and the curve can be straightened out.

"When a child with spondylitis is laid on its belly and gently raised by its legs, the entire trunk is raised at the same time; if the same manouver is tried with a rachitic child, on the other hand, the trunk remains in contact with

FIG. 134.—Advanced tuberculous spondylitis in a girl ten years of age.

the bed and the pelvis only is raised, so much so that a lordosis may even be produced in the lumbar region."

Disease of the vertebræ is usually followed by inflammation of the surrounding tissues, which may end in the formation of an abscess at the site of the disease (see RETRO-PHARYNGEAL ABSCESS), or the pus may burrow and give rise to a so-called burrowing abscess (cold abscess), which is

found either on the posterior surface of the vertebral column or on the anterior surface along the ileopsoas muscle, extending into the true pelvis.

The inflammatory and destructive processes in the bodies of the vertebræ and the destruction of the intervertebral disks later in the disease produce sharp angulation of the vertebral

FIG. 135.—Advanced tuberculous spondylitis in a girl ten years of age.

column (**gibbus, kyphosis**) (Figs. 134, 135). The pressure on the spinal marrow may produce a great variety of sensory and motor disturbances aside from actual compression-myelitis (see MYELITIS), depending on the location of the carious vertebræ. Tingling, dragging pains, and spastic or paralytic disturbances occur in the extremities, sometimes accompanied

by interference with deglutition, singultus, and disturbance of micturition and defecation.

Treatment.—Aside from supportive treatment and the best possible food with plenty of fresh air, the management of a case of spondylitis consists particularly in the employment of orthopedic measures. At first rest in the horizontal position may be all that is required, and, if there is severe pain in the inflamed part, the application of an ice-bag. To control the fever cold ablutions may be given, taking care not to incommode the patient any more than necessary.. Antipyretic drugs may be required.

Any other procedures that may be required are of a purely surgical and orthopedic character, and must be left to the specialist. The earlier the disease is recognized the better is the prospect of recovery. In most cases, however, more or less deformity remains.

Sporadic Cretinism. See CRETINISM.

Spotted Fever. See MENINGITIS, EPIDEMIC CEREBRO-SPINAL.

Sputum, Method of Obtaining.—It is sometimes necessary to obtain sputum from a child for the purpose of bacteriologic or microscopic examination. As young children always swallow the sputum, Neumann has suggested the following method of obtaining it for examination: While the tongue is depressed with a spatula, a pair of forceps wound with sterilized cotton is introduced as far as the entrance of the glottis, which causes the child to cough and the secretion contained in the air-passages to be expelled against the cotton. The latter is then washed in sterilized bouillon, which may then be used for further examination or for the preparation of a culture.

St. Anthony's Fire. See ERYSIPELAS.

St. Vitus' Dance. See CHOREA MINOR.

Stammering. See STUTTERING.

Status Thymicus. See THYMUS, ENLARGEMENT OF.

Stenosis of Pylorus. See PYLORUS, STENOSIS OF.

Sterilization of Milk. See FEEDING, ARTIFICIAL.

Stomach, Catarrh of, Acute and Chronic. See GASTRO-INTESTINAL DISEASES OF LATER CHILDHOOD.

Stomach, Dilatation of. See GASTRECTASIS.

Stomach, Inflammation of. See GASTRO-INTESTINAL DISEASES OF LATER CHILDHOOD.

Stomach Washing. See LAVAGE, GASTRIC.

Stomatitis, Aphthous.—This disease, which is often contagious, *consists* in the appearance of yellowish-white patches or plaques, resembling the vesicles of herpes and varying in size from that of the head of a pin to that of a lentil, occuring either singly or in groups, and appearing in successive crops on the tongue, upper and lower lips, gums and buccal mucous membrane, and rarely extending into the larynx and pharynx. Aphthæ consist of a fibrinous exudate on the upper layer of the mucous membrane, are surrounded by an inflammatory areola, and either retain their original size or enlarge and, by confluence with adjoining aphthæ, produce various patterns.

The entire oral mucous membrane presents the picture of catarrhal stomatitis (see STOMATITIS SIMPLEX), and the concomitant symptoms of aphthous disease differ only in degree from those of the catarrhal form.

In most cases recovery takes place in from one to two weeks; no matter how extensive the aphthæ may be, they heal without leaving a scar.

The *treatment* consists in the internal administration of

potassium chlorate in a solution of 1 to 2 per cent., and the use of the same drug in a 2 to 5 per cent. solution as a mouth-wash and for the purpose of cleansing the oral cavity. In protracted cases one may prescribe zinc sulphate, 1 gm. to 20 c.c. (15 gr. to 5 fl. dr.); copper sulphate, 0.5 gm. to 20 c.c. (8 gr. to 5 fl. dr.); a 1 to 2 per cent. solution of silver nitrate; protargol; or even a 2 to 3 per cent. solution of carbolic acid, to be applied two or three times a day to the affected areas. The pain in the mouth is relieved by applying aneson or dusting with orthoform ten minutes before meals. The *diet* should be liquid and cold.

Stomatitis, Gangrenous. See NOMA.

Stomatitis Simplex, or Catarrhal Stomatitis.—Simple catarrhal inflammation of the oral mucous membrane occurs either as an independent disease or as a concomitant of infectious diseases, and as an extension of catarrh of the nose and pharynx.

The *cause* of primary stomatitis is usually found in failure to take care of the mouth or in the use of polluted artificial nipples, causing infection with a variety of bacteria.

The disease is *characterized* by more or less redness, injection, and edema of the mucous membrane of the gums, and these signs may be present in the entire mucous membrane of the oral cavity and of the tongue. In the latter case the member is distinctly enlarged, of the color of a raspberry and fissured, while the papillæ and mucous glands appear swollen. The inflamed gums encroach on the teeth, extending between them in the form of villi, and bleed at the slightest touch. The inflamed portions of the mucous membrane are sensitive to the touch; and increased salivation, an acidulous odor of the breath, occasionally painful swelling of the submaxillary lymph-glands, and elevations of temperature are observed.

The increased sensitiveness of the diseased mucous membrane interferes with nursing and chewing, and so the nutrition suffers. For this reason every disease of the mouth,

especially during infancy, deserves the most painstaking care in the matter of prophylaxis and treatment.

The former consists in seeing that the mouth as well as the artificial nipples and bottles are kept clean.

To *combat* the catarrhal process the mouth must be washed before each feeding with a piece of gauze saturated with cold boiled water or a 1 to 2 per cent. solution of boric acid or borax, or ½ to 1 per cent. solution of potassium chlorate or sodium benzoate. When the inflammation is extensive it is well to touch the parts once or twice a day immediately after the washing with ½ to 1 per cent. solution of silver nitrate or protargol.

The milk should be cooled, and children who have been used to the bottle occasionally have to be fed with a spoon for a time.

Stomatitis, Ulcerative.—This, the severest disease of the mouth, consists in an inflammatory process beginning in the gums, which extends downward into the tissues, converting them into pulp and causing putrefactive disintegration. The disease is probably *due* to a specific organism, and, as cases occurring in families and hospitals prove, is transmissible. The lardaceous exudate frequently contains Bernheim's **bacillus fusiformis** in association with spirillæ (**spirochæte denticola**). (See ANGINA, DIPHTHEROID.) Ulcerative stomatitis sometimes occurs in association with the aphthous form, but more frequently as a spontaneous disease. Accordingly the early stage is marked by a general stomatitis with disseminated aphthæ or merely an ulcerative condition of the gums. The gingivitis begins at the bases of the incisors of either jaw, especially at points where there are rudimentary teeth or teeth are about to erupt, and extends to the rest of the gums and sometimes to the mucous membrane of the cheek (see Fig. 136).

The gums are often intensely red, spongy and swollen, and surround the teeth in heavy folds; they are painful and bleed at the slightest touch.

The odor of the breath is at first acid, but becomes fetid

when the edges of the swollen gums are converted into a yellowish, pulpy mass; when this is cast off, an ulcerative surface often remains. Wherever the edges of the gums come in contact with the mucous membrane of the tongue and cheeks, the latter undergoes swelling and often extensive ulceration. Salivation, which is increased at the very beginning of the disease, is still further stimulated by these ulcers, and a steady flow of blood-streaked and purulent fetid saliva dribbles from the half-opened mouth and produces excoriations on the external skin.

In rare cases the ulcerative process extends inward and causes destruction of the periosteum and necrosis of the jaw-

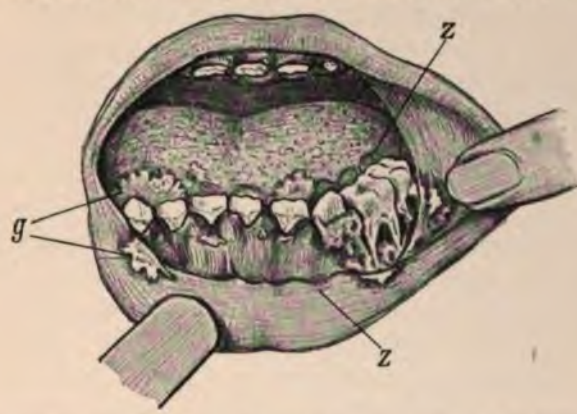


FIG. 136.—Ulcerative stomatitis in a child four years of age: *Z*, Tooth-marks on the tongue and mucous membrane of the lips; *g*, ulcers.

bone, followed by loss of the corresponding row of teeth and, in very severe cases, gangrenous disintegration of the soft parts.

The submaxillary lymph glands are swollen and painful on pressure from the beginning of the disease.

Ulcerative stomatitis is always attended by more or less severe fever, the degree of which depends on the extent of the morbid process. The disease usually runs a favorable *course*, but is often protracted, and relapses sometimes occur after apparent recovery.

Depending on the extent and duration of the disease, the

general condition may suffer from its effects for a variable time, because the child, owing to the pain associated with the disease, and probably also to the pestiferous odor and taste, refuses to take any kind of food.

Treatment.—The best remedy that has so far been discovered is potassium chlorate, both internally and externally; internally, 2 to 3 gm. (30–45 gr.) per diem; externally, in the strength of 2 to 4 per cent. (see STOMATITIS, APHTHOUS).

A great variety of disinfectant and deodorizing mouth-washes are also used to cleanse the mouth. Thus, 40 to 60 per cent. alcohol to be used several times a day; a thymol solution 1 : 1500; a 1 to 2 per cent. solution of boric acid, benzoic acid, or sodium salicylate; a ¼ to ½ per cent. solution of chinosol; or a ½ per cent. solution of potassium permanganate may be recommended. These mouth-washes may be flavored with spirit of scurvy-grass or of peppermint, or tinctures of benzoin, cinnamon, guaiac, myrrh, or krameria.

If the ulcers are extensive they should be touched every day with the solid stick until they clean up and show a tendency to heal. The local pain may be relieved by painting the parts at short intervals with aneson, tincture of coca 2 c.c. (½ fl. dr.) to distilled water 10 c.c. (2½ fl. dr.), or by the insufflation of orthoform.

The food should be cold, or at least cool, and should be selected with a view to improving the strength.

Owing to the danger of relapse, rigorous cleanliness of the oral cavity and teeth must be insisted upon even after recovery from the disease. (See MOUTH AND TEETH, CARE OF.)

Strabismus. See EYE, DISEASES OF.

Stricture of Esophagus. See POISONING.

Stricture of Pylorus. See PYLORUS, STENOSIS OF.

Stridor Congenitus.—A congenital condition manifesting itself by loud sustained bleating, clucking, or peeping

expiratory sounds of a uniform quality. More rarely similar sounds are emitted during both expiration and inspiration, or only during inspiration; hence we distinguish expiratory and inspiratory stridor.

The *cause* of this benign phenomenon, which sometimes disappears after the first year of life, but may persist for some time longer, is probably to be sought in arrested development or disturbances of innervation in the respiratory center; in some cases one is justified in assuming that it is due to hyperplasia of the thymus gland (see THYMUS ENLARGEMENT). The condition disappears spontaneously, and, as it does not interfere with feeding, a favorable *prognosis* may be given.

The condition is not amenable to treatment.

Strophulus.—A cutaneous lesion occasionally observed in children during the first and second years of life, which belongs partly to urticaria and partly to prurigo, as the various synonyms, **urticaria papulosa, lichen urticatus, lichen strophulus,** and **prurigo infantilis,** sufficiently indicate.

The characteristic features of the disease are the periodic appearance of the eruption; its localization on the extensor surfaces of the extremities, the buttocks, and the soles of the feet; and the intense itching. The lesions consist either of dark red macules, ranging in size from the head of a pin to a lentil or pea, or of pale red papules surrounded by an inflammatory areola with regular borders. Small vesicles filled with a watery fluid develop chiefly on the palms of the hands and soles of the feet, and are not infrequently opened by the scratching induced by the intense itching, leaving small ulcers in the skin covered with crusts; or several small ulcers may coalesce to form larger ones.

Strophulus has a tendency to recur frequently, and almost every attack is accompanied by marked disturbance of the general health.

The duration of the disease is often very variable and sometimes extends over months and years; if the condition lasts several years, one is justified in pronouncing it a prurigo.

The *cause* can rarely be determined; sometimes excessive eating, constipation, chronic dyspepsia, a starchy diet, and nervous predisposition are incriminated.

The *local treatment* is much the same as that of urticaria, and consists in the application of vinegar washes, alcoholic solutions, and baths containing potassium sulphate, 40 gm. (10 dr.) to the bath, 2 tablespoonfuls of Vleminckx's solution, or oak-bark, ½ kg. (1 pound) in a decoction, to mitigate the distressing itching.

In chronic cases Wilkinson's ointment and naftalan often act favorably.

Internally, ichthyol 0.10 to 0.50 gm. (1½–7½ gr.) per diem, in pills, or ichthalbin 0.30 gm. (4½ gr.) three times a day, may be prescribed; at the same time the spread and duration of the malady may be controlled by means of laxatives and regulation of the diet. The itching can sometimes be relieved by giving a dose of antipyrin or phenacetin in the evening.

Struma (*Goiter*).—In rare cases goiter is congenital; as a rule it develops during puberty, especially in the female sex, and in many cases heredity or exposure to the disease in an infected locality is ascertained.

The hyperplasia may involve the entire thyroid gland or only one lobe; sometimes the tumor is cystic (**struma cystica**). The condition may be acute or chronic. The *causes* of acute struma are thought to be violent cough (whooping-cough) or the drinking of water in regions where goiter is endemic. The contributory factors to the chronic form of the disease, aside from predisposition, are excessive use of the voice in crying or singing, practising with wind instruments too early in life, and constricting neckwear.

Goiter manifests itself not only by visible deformity in the shape of the neck, but also by a variety of accidents which are often quite alarming. In congenital goiter the pressure on the trachea, depending on the degree of enlargement of the thyroid gland, may lead to asphyxia, atelectasis of the lungs with cyanosis, and passive hyperemia of the brain,

which, through increasing stenosis of the trachea, may lead to a lethal ending. The *symptoms* of increasing tracheal stenosis also dominate the clinical picture of acquired goiter, dilatation of the heart and venous congestion being the most prominent (see Fig. 137).

Occasionally hyperplastic processes in the thyroid gland are followed by signs of intellectual degeneration, which are discussed under the heading of MYXEDEMA.

FIG. 137.—Boy five years of age with goiter; the outlines of the enlarged heart are indicated.

The *prognosis* is grave only when the goiter is congenital; in the acquired form the gravest symptoms are often relieved by therapeutic measures and sometimes disappear altogether.

The iodin preparations are still considered the sovereign remedy and may be administered in the form of ointments of iodin and potassium iodid, 0.1 and 1 to 10 gm. (1½ and 15 gr. to 2½ dr.), or potassium iodid, 1 to 10 gm. (15 gr. to 2½ dr.); or by painting the part with tincture of iodin and tincture of galls, equal parts of each; by inunction of 6 per cent. iodovasogen; or iodin water compresses applied over night. This external *treatment* may be supplemented

by the internal administration of iodin preparations or a course at some iodin bathing resort; or internal treatment alone may be employed.

Quite as good as, and in many cases even better than, the iodin treatment is the internal administration of thyroid gland tablets, which finds its greatest therapeutic triumph in cretinism caused by hyperplasia of the thyroid gland. Either Merck's thyreoidin tablets or those of other reliable makers may be selected, the dose being adapted to the child's age. At first one tablet is given every other day, the child being kept under constant observation with reference to the body-weight and general condition, and after one or two weeks 1 or even 2 or 3 tablets may be given daily.

So much for the therapeutic measures. In addition, the above-mentioned etiologic causes and especially residence in a goiter region must be avoided.

It should also be mentioned that in struma cystica the iodin treatment is not only useless, but in fact exceedingly harmful, because the small remainder of functionating gland-tissue is thereby removed and grave symptoms develop, which are erroneously described as symptoms of iodin cachexia, but in reality are due to cachexia strumipriva.

Stuttering (*Stammering*).—Stuttering is *due* to a spastic disturbance of the organs of speech and of the diaphragm, and is to be regarded as a coordination-neurosis. Depending on the length of the spastic contractions in the muscles of respiration, phonation and articulation, there is more or less disturbance of speech, which is most apparent when the child tries to pronounce some difficult word. The sudden stoppage of the speech makes the child feel embarrassed and helpless, and thus gives rise to certain associated movements of the muscles of the eyes and of the rest of the body. The condition is often hereditary, and sometimes is due to injuries of the skull, but is chiefly brought on by psychic emotion (sudden and violent anger), or, if it already exists, it is thereby aggravated. Sometimes it is due to debility, especially after severe infectious diseases, to psychic emotion (fear or fright),

and not infrequently it has its origin in imitation or improper training.

The disturbance of speech may assume various forms and varies greatly in degree, depending sometimes on pathologic changes in the nasopharyngeal space or disturbance of nasopharyngeal respiration (adenoid vegetations, nasal polypi) or defects of the hard or soft palate (cleft palate).

Prophylaxis and Treatment.—Disturbances of speech require for their correction a course of exercises in pronouncing under a teacher's supervision, supplemented by certain special movements to correct mistakes in pronouncing individual letters.

Stutterers must be taught to regulate the breathing and keep time in expanding and emptying the lungs. They must be trained to repeat words or sentences slowly, syllable by syllable; in short, the malady, which cannot always be entirely corrected, must be combated by suggestion and by supporting and strengthening the will-power.

Before beginning a course of treatment to correct disturbances of speech the nasopharyngeal space must be examined for the presence of any pathologic changes, and if such are found they must be subjected to appropriate treatment. In addition, various procedures to strengthen the body, ablutions, baths, gymnastic exercises, and swimming, must be provided.

The term stammering should be used to indicate faulty pronunciation. The speech is fluent and there are no involuntary movements. The stammering may be merely the result of defective practice and education at the time the child begins to learn to speak, or may be due to some organic trouble, such as anomaly of the teeth, lips or tongue, cleft palate, or defects in the soft palate after diphtheritic and syphilitic processes. The *prognosis* depends upon whether the organic cause, if any is present, can be removed.

Subchordal Laryngitis. See LARYNGITIS SUBCHORDALIS.

Sublingual Ulcer. See ULCER, SUBLINGUAL.

Sucking of the Thumbs. See THUMB-SUCKING.

Sudamina. See MILIARIA.

Sunstroke. See BRAIN, HYPEREMIA OF.

Supernumerary Digits. See POLYDACTYLISM.

Suppurative Meningitis. See MENINGITIS, SUPPURATIVE.

Sweating, Excessive. See HYPERIDROSIS.

Syphilis, Congenital. See SYPHILIS, HEREDITARY.

Syphilis, Hereditary (*Syphilis, Congenital; Syphilis Neonatorum*).—Syphilis is inherited either from a syphilitic father or a syphilitic mother. The degree of infection depends on the virulence of the parental disease, and accordingly a great variety of clinical forms are observed in the fetus.

In the most severe cases the woman usually aborts or is prematurely delivered of either a living or a dead and putrefied fetus. After several miscarriages of this kind a more or less viable child is born, which at birth or during the first days of its life exhibits various signs of hereditary syphilis. These children who are born with syphilis present the form of bullous syphilides, which have been designated **pemphigus syphiliticus.**

The seats of predilection for the eruption are the palms of the hands and soles of the feet, although the blebs occasionally appear in crops on the extremities and the trunk. The blebs are formed by a thin layer of epidermis and contain a turbid, purulent fluid. The attenuated capsule soon ruptures, leaving dried-up remains of epidermis along the edge and a circumscribed erosion in the derm, which may heal without leaving a scar. In addition to this characteristic eruption premature children present a variety of other

changes, which will be mentioned in connection with the pathology of syphilis.

When the infection of the parents is less virulent, the typic appearances, which establish the *diagnosis*, manifest themselves later. Coryza or ozena developing during the first weeks of life is usually the first *symptom* of the disease. The mucous membrane of the nose becomes swollen and the child is said to have the "snuffles"; the respiration is snoring and difficult, and this greatly interferes with nursing.

FIG. 138.—Hereditary syphilis: Radiating fissures of the lips (after A. Fruhinsholz).

Soon a blood-streaked, purulent secretion makes its appearance and causes erosions of the nasal passages and of the upper lip; and, later, deformities of the nose or even destruction of the cartilaginous or bony skeleton may be brought about. The hoarseness of the cry is sometimes a prominent symptom. Soon the face assumes a peculiar pale, dirty yellow or brownish coloration and the skin becomes hard and rigid, especially on the forehead and chin, while seborrheic crusts collect on the eyebrows.

FIG. 139.—Hereditary syphilis: Extensive papular and pemphigoid eruptions (after A. Fruhinsholz).

Other striking signs are the rhagades at the angles of the mouth (see Figs. 138, 144, 145) and at the anal cleft. In a

FIG. 140.—Hereditary syphilis (after A. Fruhinsholz).

comparatively short time, usually within the second month of life, there appear the various exanthemata, which, accord-

ing to their intensity, are divided into macular (**roseola syphilitica**), maculo-papular, and papular lesions (see Figs. 139, 141). They are usually found on the extremities and more sparsely

FIG. 141.—Hereditary syphilis (after A. Fruhinsholz).

on the trunk (see Fig. 142). After the eruption (of whatever variety it be) has faded away, the skin sometimes desquamates and retains a coppery-red discoloration for some time. The papules, which appear chiefly at the edge of the mucous

membranes at the angle of the mouth, the anal cleft, and on the genitalia, undergo maceration and are frequently converted into extensive ulcers covered with a lardaceous exudate, which also spreads to the outer integument, or by contact may produce ulcers on opposed surfaces (see Figs. 143, 146).

FIG. 142.—Hereditary syphilis: Papular eruption on the soles of the feet.

This process of disintegration leads to the development of extensive callous ulcerations near the rhagades, which take a long time to heal and then leave glistening white, radiating scars (see Fig. 138).

Well-marked condylomata as well as mucous patches are found on the tonsils, the gums, and the tongue in the relaps-

FIG. 143.—Syphilitic ulcers (primary lesion) in a child four years of age.

ing form of syphilis. The palms of the hands, and especially the soles of the feet, of luetic children usually present infiltration of the skin with more or less extensive desquamation.

The skin is tense, of a coppery color, and glistens as though covered with mucilage. Some of the fingers and toes, especially fingers, not infrequently become the seat of onychia or paronychia, and as a result of the inflammatory process the

FIG. 144.—Rhagades of the upper lip and lardaceous ulcer of the palate in an infant eight months of age suffering from hereditary lues.

FIG. 145.—The same case shown in Fig. 144. After several days of antisyphilitic treatment the ulcer has disappeared and a perforation of the palate is seen. Healing of the perforation in 20 days, during which general treatment was kept up.

nails fall out and are replaced by a misshapen growth. More rarely a phalangitis or inflammatory condition of the phalanges (somewhat resembling in its outer appearance **spina**

FIG. 146.—Condylomata lata, the result of acquired syphilis in a child five years of age.

ventosa) occurs, but differs from the latter by the fact that the fingers are covered with normal skin.

Another *symptom* of hereditary lues, which is not often visible on inspection, is disease of the osseous system, manifesting itself chiefly in asymmetric and often painful thickening at the epiphyseal borders. This osteochondritis interferes with the movements of

FIG. 147.—Girl twelve years of age, the subject of hereditary syphilis, with enormous thickening and lengthening of the right tibia and of the lower portion of the left humerus.

FIG. 148.—*X*-ray picture of the legs of patient shown in Fig. 147.

the upper and lower extremities, causing what is known as **Parrot's pseudoparalysis.** The child does not move the affected

limbs, and when they are raised from the bed they fall back limp and lifeless. The hand exhibits the characteristic "flipper position."

Periostitic processes with secondary thickening of the

FIG. 149.—Teeth of a boy twelve years of age affected with hereditary syphilis. The right upper central incisor exhibits the characteristic peg-shape and the crescentic notch.

FIG. 150.—Bands of adhesions from the palate of the same case (Fig. 149): A, Entrance to pharyngeal space; B, remains of uvula.

bones (tophi) and local or general glandular enlargement occur quite frequently in the relapses of hereditary syphilis, which are not uncommon (see Figs. 147, 148).

The permanent teeth sometimes exhibit very remarkable changes in the late forms of syphilis (Hutchinson's teeth),

FIG. 151.—Hutchinson's teeth in hereditary syphilis: *a*, The two upper central incisors (second dentition) exhibit deep transverse and longitudinal furrows and a concave notch in the edge. Although the teeth are normal in length, the width is less than normal, thus producing a broad interspace between the central incisors; *b*, the upper central incisors (second dentition), immediately after eruption, and the four lower incisors. The lower surface of the upper incisors is rough from the presence of projecting points of dentine. The upper teeth are short and diverge, leaving a broad interval between them. The four lower incisors present a number of small excrescences like nails from imperfect enamel formation. The base of the excrescences is everywhere in the same plane (after Hutchinson).

especially the upper incisors, which are characterized by their shape (like that of a keg, "peg-shape") and a crescentic notch in the edge of the tooth (Figs. 149, 151). As a rule, this morphologic anomaly is associated with loss of the enamel.

In the late forms of hereditary syphilis articular affections sometimes develop in the wake of disease of the bones or periosteum; the articular disease chiefly attacks the knees and manifests itself by dropsical effusion, or articular inflammation, resulting finally in deformity. The parenchymatous diseases of the cornea and rarely of the iris which occur in late forms, the deafness which is due to labyrinthine disease, and the above-mentioned anomalies of the teeth, together with the arthritic changes, constitute the most important

FIGS. 152, 153.—Syphilitic infant with microcephalus.

diagnostic features of hereditary syphilis, and are of great aid in establishing the diagnosis ("Hutchinson's triad").

Other pathologic changes that deserve to be mentioned are gummatous or diffuse infiltration of the testicle, inflammatory changes in the intima of the blood-vessels, and **periarteritis syphilitica**, as a result of which hemorrages may take place into the skin and especially into the meninges or into the brain, the latter often representing the primary *cause* of infantile cerebral paralysis. These vascular affections are probably also in part responsible for the many disturbances that occur in the nervous system and which may produce hydrocephalus, cephalalgia, epileptic attacks, impairment of the intelligence,

various kinds of palsies, progressive paralysis and tabes (see Figs. 152, 153). In addition to the above-mentioned changes, certain other morbid alterations occur in the internal organs in congenital syphilis, the intensity of which depends on the virulence of the infection.

Thus, the spleen is usually enlarged, and the border of the viscus feels sharp on palpation. The liver is also enlarged from interstitial hepatitis or the presence of gummata. When the kidneys are diseased the urine contains albumin; and when the large intestine is involved in the syphilitic process, swelling of the follicles and the signs of enteritis are found.

The very rare alteration in the lungs which is known as white pneumonia is only found in stillborn or premature asphyctic children.

Cases presenting the symptoms of late or tertiary syphilis, in which the signs of the previous syphilitic affection cannot be demonstrated, or have escaped discovery, are designated **lues hereditaria tarda** and correspond to the tertiary forms in adults.

The *course* of hereditary syphilis is chronic and the disease has a tendency to relapse even after many years.

The *prognosis* must be determined by the severity of the disease and by the infant's strength. In view of the many relapses that occur, associated as they may be with severe disturbances, the prognosis should always be guarded; it depends largely on careful feeding and the institution of appropriate treatment at the right time.

Breast-fed children have the best chance of getting well. In accordance with Colles' law, that the mother is immune to lues and cannot therefore be infected by her own child, one ought not to hesitate to allow the mother to nurse the child if the conditions for nursing are even half-way favorable. The case is different, however, when a wet-nurse is to be selected. She must be warned that she will probably contract the disease with its various consequences, and even if she should consent, such a procedure would be in direct violation of the laws of humanity. If breast-feeding is out of the question [which is practically decided by the mother's in-

ability to nurse—ED.], the most rational method of artificial feeding must be instituted; but the prospect is then less favorable.

Treatment.—The mercurial preparations are still considered the sovereign remedies against hereditary syphilis, and among them the preference should be given to calomel. The drug is to be prescribed in doses of 0.005 to 0.01 gm. ($\frac{1}{12}$–$\frac{1}{6}$ gr.); if there is anemia it should be used in combination with lactate of iron, 0.05 to 0.10 gm. ($\frac{3}{4}$–1$\frac{1}{2}$ gr.) to the dose, and, if symptoms of intestinal irritation make their appearance, combined with Dover's powder, 0.01 to 0.02 gm. ($\frac{1}{6}$–$\frac{1}{3}$ gr.) to the dose, or with powdered opium, 0.0005 to 0.001 gm. ($\frac{1}{132}$–$\frac{1}{66}$ gr.) to the dose.

The following preparations are also used with good results: tannate of the protoxid of mercury, 0.01 to 0.04 gm. ($\frac{1}{6}$–$\frac{3}{5}$ gr.) twice a day; hydrargyrum oxydulatum nigrum, 0.01 gm. ($\frac{1}{6}$ gr.) twice a day; and proto-iodide of mercury, 0.005 to 0.01 gm. ($\frac{1}{12}$–$\frac{1}{6}$ gr.) several times a day.

Although children possess a great tolerance for mercury so long as they have no teeth, intestinal irritation, nevertheless, develops after a protracted course of the drug and constitutes an indication for its temporary withdrawal. After a time one of the preparations may be resumed, or inunctions of 0.50 to 1 gm. (7$\frac{1}{2}$–15 gr.) of mercurial ointment may be begun. A course of treatment with inunctions should extend over five or six weeks, during which time the inunctions are given every day for periods of five days, interrupted by a bath on the sixth day.

The ointment prepared with resorbin, which is put up in collapsible tubes, is used in the same way. Other forms of mercury for external use are the Unna-Beiersdorf's Mercury-plaster-mull, Welander's bags, and the mercolint apron. With the latter the mercury evaporates and exerts its effect by inhalation.

In selected cases, when there are no ulcers of the skin, medicinal treatment may be replaced by the use of bichlorid baths, or the latter may be employed alone. To the bath, which must be prepared in a wooden tub, from 1 to 2 bi-

chlorid tablets of 1 gm. (15 gr.) are added; but great care is necessary to prevent any of the water from entering the mouth. These bichlorid baths are at first given daily and later every other day; from ten to twelve of these baths sometimes suffice to effect a cure. The treatment of hereditary lues with hypodermic injections of bichlorid of mercury, peptonate of mercury, formanid-mercury, or salicylated mercury, which has been much recommended, is impracticable among children on account of the pain and the danger of abscess-formation.

Whatever method of treatment is selected must be kept up until the visible signs of syphilis and the splenic enlargement have subsided. To prevent relapses as much as possible some form of antisyphilitic treatment should be resumed after a suitable interval.

When the late forms of syphilis, corresponding to the tertiary forms of adults, are present in a given case, the iodin preparations must be employed. The following are recommended: potassium or sodium iodid, 0.20 to 0.50 gm. (3–8 gr.) per diem in liquid form, either before or after meals; equal parts of the iodid-of-iron syrup and simple syrup, 5–10 to 20 drops three times a day; saccharated iodid of iron, from 0.02 gm. ($\frac{1}{3}$ gr.) in newborn infants, to 0.04 gm. ($\frac{2}{3}$ gr.) in infants one year old, three or four times a day; Liebe's malt extract with iodin and iron; and a recent preparation called iodalbacid, of which twice as much is given as of potassium iodid. The late forms of syphilis and relapses are favorably influenced by a course of iodin baths at Hall, Darkau, Lipik, Krankenheil Tölz, or Heilbrunn.

Syphilitic children must be kept under constant supervision, even after they have apparently recovered. The accompanying rachitic changes in the osseous system and the secondary anemia require both dietetic and suitable medicinal treatment.

Finally, it should be mentioned that children may also occasionally acquire syphilis, and the *course* is the same as in adults—that is, the disease begins with the primary lesion, which is followed by secondary phenomena.

The primary lesion may be contracted in a variety of ways; in most cases the contagion is transferred from the lips of luetic persons to the child's oral mucous membrane during the act of kissing.

The *treatment* of the secondary symptoms of acquired syphilis is the same as that of the hereditary disease.

Syphilis Neonatorum. See SYPHILIS, HEREDITARY.

Tabes Mesenterica.—This term, which we have taken from the older authors, is used to describe the particular form of *atrophy* which follows chronic intestinal diseases, dyspepsia, follicular enteritis, and, occasionally, tuberculosis. In addition to the changes caused by the chronic catarrh of the intestinal mucous membrane, there are found follicles in a state of cicatrization or ulceration, and enlargement of the mesenteric glands, which is often quite marked and is characteristic of the disease.

The *clinical picture* is dominated by the increasing atrophy. The skin is pale, dry, wrinkled, covered with scales and often of a yellowish or dirty color from the deposition of pigment; on the buttocks, the inner surfaces of the lower extremities, and the heels the skin exhibits a reddish or bluish color from the presence of intertrigo, and is edematous, thickened, and in places covered with dry, impetiginous ulcers. The fontanel is depressed, the cranial bones not infrequently override, the growth of hair is sparse, the individual hairs are brittle and dry, and the occiput is bare from the constant rubbing. The countenance is small, senile, and wrinkled, with deep nasolabial folds. The nose and ears are cold and pale, as are the lips, which are covered with crusts, and the mucous membrane of the mouth. The tongue is covered with a thick brown fur or with masses of thrush, and the odor of the breath is acid or fetid. The abdomen is greatly distended by meteorism and forms a sharp contrast to the greatly emaciated thorax; the skin of the abdomen is so thin that the loops of intestine can be seen through it; the peristaltic movements are sluggish. The external lymph glands, espe-

cially the inguinal glands, as well as the spleen and liver, are often greatly enlarged. The appetite is usually completely abolished and thirst is increased. Not infrequently, on the other hand, the desire for food is colossal and the child greedily devours unusual quantities of food until shortly before death.

The stools are increased in number, watery, dyspeptic, or mixed with mucus, offensive, and irritating to the skin. The excretion of urine is diminished when there is diarrhea and the urine has a strong ammoniacal odor. During the course of tabes mesenterica temporary improvements take place, both in the general condition and in the appearance of the stools, but these never last long; the atrophy continues, the diarrhea recurs, and with the picture of complete exhaustion and preceded by the formation of secondary edema in the legs, and finally convulsions and other complications, especially catarrhal pneumonia, death closes the scene.

During the *course* of the disease, which is usually greatly protracted, the child is extremely restless day and night, sleeps badly, and toward the end cries and whimpers incessantly.

In most cases, therefore, the *prognosis* is extremely doubtful, and recovery is hardly to be hoped for unless the child can be fed on the breast.

The most important part of the *treatment* consists in securing the proper nourishment, as therein lies the only ray of hope. If it is impossible to obtain a wet-nurse, sterilized cows' milk—suitably diluted—and the various foods that are used as substitutes for milk, may be tried, but the nourishment must be administered in very small quantities at a time. The medicinal treatment is purely symptomatic and directed against the diarrhea and the signs of exhaustion and cardiac weakness, which become more and more marked and must be combated by means of the remedies mentioned under the appropriate headings.

Tænia. See INTESTINAL PARASITES.

Tapeworm. See INTESTINAL PARASITES.

Teeth, Care of. See MOUTH AND TEETH, CARE OF THE.

Telangiectasis. See ANGIOMA.

Testicles, Undescended. See CRYPTORCHIDISM.

Teeth, Development of the.—The normal development, time of eruption, and order of appearance of the temporary teeth are shown in the accompanying illustration (see Fig. 154).

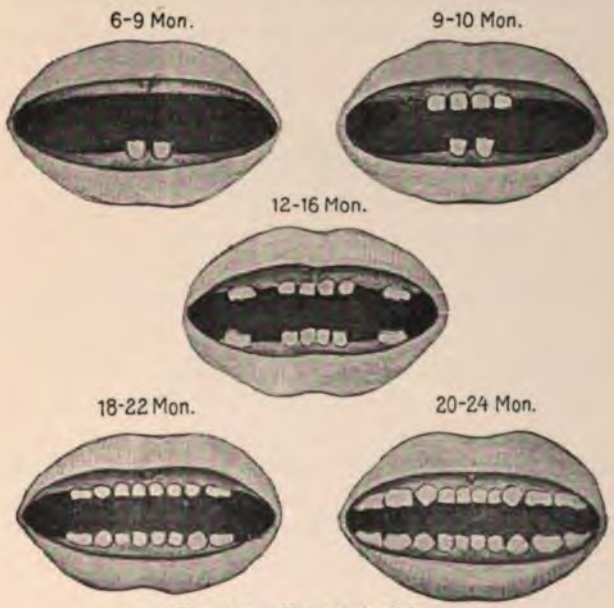


FIG. 154.—Normal dentition.

By the end of the second year the first set, consisting of twenty teeth, should be fully developed in a normal child. But the time of eruption, as well as the order in which the teeth make their appearance, is subject to variation, attributable in part to heredity, but mostly to some intercurrent disease during the process of dentition. Rachitis is probably the most important *cause* of faulty dentition; the disease often leads to

deformity and defective development of the teeth (see Fig. 155).

In rare instances children are born with one or two teeth, which are usually loose in their sockets and fall out, or may have to be extracted if they interfere with nursing or injure the nipples.

With regard to the eruption of the permanent teeth, the first molars make their appearance between the fifth and sixth year. This is followed by gradual loosening of the temporary teeth in the order of their eruption, their places being filled by the permanent teeth.

The temporary, as well as the permanent, teeth must be cared for and kept scrupulously clean, as explained under the heading of the care of the mouth and teeth, to which the reader is referred for further details. (See MOUTH AND TEETH, CARE OF.)

FIG. 155.—Irregularity in shape of freshly erupted temporary teeth.

Tetanus Neonatorum.—The *cause* of this disease is undoubtedly infection with Nicolaier's tetanus bacillus, and in most cases the umbilical stump represents the portal of infection.

The infection may, however, start in any other external injury, which explains the cases occurring after circumcision. The actual onset of the disease is sometimes preceded by prodromata consisting in general unrest and refusal to take food. Only too soon, however, the first alarming symptoms declare themselves, at first in the face and then in the jaws.

The face becomes wrinkled, the eyes are closed, and the skin is reddened. The mouth is tightly closed; the lips protrude in radial folds, as in the act of whistling, but remain

rigid; the power of sucking and swallowing is altogether lost; and the masseter muscles are hard and prominent.

To the above *picture* of trismus is superadded spastic contraction of the muscles of the neck, causing retraction of the head. The muscular rigidity rapidly spreads downward and involves all the muscles of the body. The entire body becomes rigid and somewhat bowed, and either this condition persists until death occurs in a few days, or a partial improvement takes place, which, however, is often deceptive in a *prognostic* sense.

Touching the patient, and any attempt to feed, may increase the severity of the tetanic convulsion.

Temperature and pulse are often abnormally increased.

The chief object of the *treatment* is to diminish the convulsive attacks, and this is best accomplished by the administration of chloral hydrate enemas. When the symptoms begin to subside the chloral may be combined with potassium bromid, 1 to 3 gm. (15–45 gr.) per diem, or the bromid may be given alone. Extract of physostigma is also well spoken of; it is to be administered in doses of 0.0025 gm. ($\frac{1}{27}$ gr.) hypodermatically in rapid succession. The employment of subcutaneous and subdural injections of Behring's and perhaps Tizzoni's tetanus antitoxins promises a material reduction of the mortality, which at the present time is most depressing. Behring's antitoxin, a preparation of high potency, which is furnished in the dry state by the Höchster Farbwerke, is dissolved in physiologic salt solution at a temperature of 37° C. (98.6° F.), and administered by subdural injection, the needle being inserted between the third and the fourth lumbar vertebræ. The dose of the antitoxin is 10 c.c. and the entire quantity of fluid to be injected 100 c.c., which is administered several times daily for a period of two or three days. The dose of Tizzoni's antitoxin is 0.3 c.c.

The difficulty of feeding is overcome by administering breast-milk through a soft catheter introduced through the nose.

In the newborn infant, owing to the great danger of infection through the navel or other wound, the asepsis of the

lying-in room, and antiseptic treatment of the umbilical stump, or any other wound, are of the utmost importance.

Tetany (*Arthrogryphosis*).—The term tetany is used to designate a condition *characterized* by a certain typical, tonic convulsion in the muscles of the extremities without any clouding of the consciousness. In addition to this phenomenon, the mechanical and electric irritability of the motor nerves is increased. The disease is therefore similar to the tetany of adults. Thus, heightened mechanical irritability is found, especially in the distribution of the facial nerve (by tapping with the finger over the *pes anserinus* twitching of the facial muscles is elicited: facial phenomenon, Chvostek's symptom), and also increased galvanic irritability (Erb's symptom)—that is to say, KCC occurs with a very small current strength and, if the latter is moderately increased, is converted into KCT. These two symptoms taken in conjunction with spontaneous convulsive attacks make up the picture of **manifest tetany** (the attack), while heightened irritability without spontaneous convulsions, but with Trousseau's phenomenon, characterize **latent tetany** (period of latency). The last-named phenomenon (Trousseau's) consists in the production of the typical tetanic position of the hands (obstetric hand) by prolonged pressure on the nerves and vessels in the inner groove of the biceps.

The convulsions may be of short duration and separated by long intermissions, but sometimes the intermissions diminish in length and the intensity of the convulsions increases. Occasionally the rigidity continues for weeks with only slight remissions during sleep. The tendon reflexes are for the most part increased; cutaneous sensation is not disturbed, but passive extension of the contracted members is usually painful.

Tetany is characterized by certain pathognomonic convulsions. Thus, the upper extremities are often spasmodically flexed on the thorax, and the hands, particularly, assume a position of contracture, which has been aptly described by the term "obstetric hand." The lower extremities are either in extension or spasmodically flexed at the hip- or knee-joint,

the toes are flexed on the soles of the foot, the ankles extended and in distinct equinus position (see Fig. 156). As the intensity of the disease gradually increases, symmetric contractures are formed in the affected extremities and sometimes extend to the muscles of the back and face and to the diaphragm.

In many cases the *cause* of tetany is unknown. In infants and young children rachitis seems to be an important predisposing factor, and spasm of the glottis and eclampsia occur along with the tetany. Acute, as well as chronic, gastro-intestinal diseases may also be mentioned as occasional causes, and there seems to be some basis for the theory of intestinal intoxication.

FIG. 156.—Infant with mild attack of tetany, showing characteristic spasmodic position of hands and feet (Church).

Postmortem examination of the central nervous system always yields negative results.

Aside from the cases of well-marked tetany, so-called latent tetany, which has already been mentioned, is not infrequently discovered during the earliest years of childhood. Its most pronounced symptom consists in marked spasm of the glottis and heightened galvanic irritability of the nerves, occasionally with Trousseau's or Chvostek's symptom.

The *prognosis* of tetany is in many cases favorable; the exceptions are in those cases in which universal rigidity persists for days and weeks, bringing the danger of secondary disease of the lungs, and in cases with severe laryngospastic attacks, particularly in lymphatic, pasty children.

The *treatment* is determined by the causes so far as they are known at the present time. Accordingly the toxins that are supposed to be present in the organs of digestion are to be attacked by therapeutic measures, such as lavage and

thorough evacuation of the intestinal canal by means of calomel, or other laxatives, in order to effect their removal and prevent their being formed anew.

With the same object in view articles that undergo albuminous decomposition must be excluded from the *diet*, which should be limited to more or less dilute, sterilized, or Pasteurized milk or broths.

To relieve the symptoms nerve sedatives are employed; the bromids or even chloral hydrate, administered in several doses through the day either by the mouth or in the form of an enema, have been found most useful.

When the tetany represents a concomitant of rachitis, whether it is accompanied by laryngospasm or not, the administration of phosphorus-cod-liver-oil and similar preparations (see RACHITIS) is much lauded in certain quarters.

Protracted warm baths given repeatedly in the course of the day sometimes exert a favorable influence on the course and intensity of the disease.

Thrombosis of the Cerebral Sinuses. See SINUS THROMBOSIS.

Thrush.—Thrush is a disease of the oral cavity *due* to the presence of a fungus, and occurs most frequently during early infancy in children suffering from diseases of the digestive organs. The fungus belongs to the saccharomyces, which occupy an intermediate position between moulds and fission fungi, and grows on an acid sugar-containing soil, such as is furnished by the oral cavity of an infant when it is not kept clean.

In a smear preparation the squamous epithelial cells are found to contain the jointed mycelium threads, either singly and scattered throughout the cell or in a close network, exhibiting one or more club-shaped enlargements of the terminal segments (sporangia) and, between these enlarged segments, groups of highly refractive circular spores (conidia) (Fig. 157).

Infection with the thrush fungus takes place through the air and the food, as well as by natural and artificial nipples

when they are not kept clean. It is apt to develop after some mechanical injury, especially unskilful cleansing of the infant's mouth.

In the presence of the above-mentioned favorable conditions for the development of the fungus a white scab or plaque develops, at first insular and then gradually, by the development of fresh foci and by the confluence of these, covering a large area of the mucous membrane of the mouth and tongue. With this there is a more or less extensive stomatitis. The growth cannot be removed without using force, and its removal is followed by a slight hemorrhage from the mucous

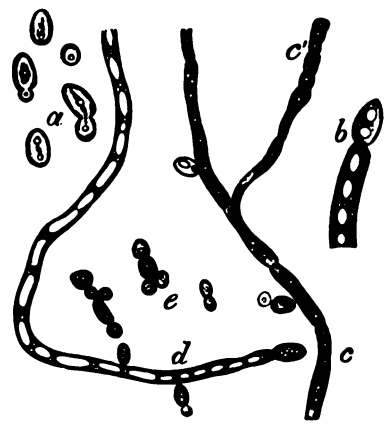


FIG. 157.—Oidium albicans: *a*, Isolated spores; *b*, end of mycelium thread with terminal conidium, enlarged 700 times; *c*, mycelium thread with terminal, *d*, with terminal and peripheral conidia; *e*, isolated spores, enlarged 400 times (after Bizzozero).

membrane. In severe cases the disease is not confined to the oral cavity, but following the distribution of squamous epithelium, the growth extends to the esophagus and larynx, in the latter case causing hoarseness and cough.

The occurrence of thrush in association with stomatitis gives the child pain, which is increased by touching the part, and especially by the act of feeding. As a result the child does not take sufficient nourishment, and the general condition is markedly affected. In rare cases the *diagnosis* may present some difficulties as, for example, in older children when the fungus is present on the tonsils.

The *prognosis* and course of thrush depend upon the child's strength and the faithful observance of prophylactic measures. These latter consist in keeping the oral cavity and the mother's nipples, or the bottles and rubber nipples, absolutely clean, some alkaline solution being used for the purpose.

As soon as thrush makes its appearance, the oral cavity must be cleansed at intervals of two or three hours with a 2 per cent. solution of boric acid or sodium biborate, or a pale-red solution of potassium permanganate. In addition, the affected spots should be painted twice a day with a 1 to 2 per cent. solution of silver nitrate. The baby may also be allowed to suck a piece of cotton or absorbent gauze containing a knifepoint of a mixture of boric acid 20 gm. (5 dr.) and saccharin 0.3 gm. (4½ gr.). Suitable *treatment* of the digestive disturbances must not be neglected.

Thumb-sucking.—This bad habit, which is often observed in the earliest weeks of life, is *due* in part to irrational training, the child being given the finger or some kind of "mother's comfort" to suck in order to keep it quiet. In other cases the infant is driven by hunger to suck its fingers and keeps up the habit later on. Sometimes thumb-sucking is combined with other movements, such as rubbing its hair or pulling its own, or its nurse's, ear. As a rule, a history of heredity is obtainable in these cases. In older children sucking some object, such as a cloth, the shirt-sleeve, or the pillow, or sucking the tongue or some other part of the body (lip, hand, or foot) appears to exert a hypnotic influence and becomes such an inveterate habit that when the attempt is made to break it up the child often lies awake for hours.

There is evidently some connection between thumb-sucking and onanistic voluptuous desires in those cases in which the child, in addition to some kind of sucking, indulges in rhythmical jerky movements of the body and rubs the knees or thighs together or rubs them against some object placed between them. After thumb-sucking has been indulged in for a long time, the increased salivation which results produces eczema of the lips and leads to the formation

of tartar. The incisors exhibit a characteristic anomaly of position (see Fig. 158) and other marks resulting from the constant attrition, while the fingers present macerated areas with secondary ulcerations.

The habit of biting the nails is analogous to thumb-sucking. The terminal phalanges of the fingers become clubbed, the nail disappears almost completely, and the nail-bed is replaced by a thick fold.

An attempt to break up the habit of thumb-sucking often meets with insuperable obstacles, and to be successful must

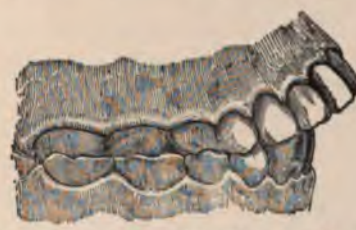


FIG. 158.—Deformity caused by thumb-sucking (Darby).

be carried out radically by applying a suitable bandage which absolutely prevents sucking. Unfortunately this may mean days and nights without sleep, during which the child keeps up a ceaseless crying.

Thymus, Enlargement of (*Status Lymphaticus vel Thymicus*).—Although too much importance has recently been attributed to enlargement of the thymus gland, especially in cases of sudden death, it cannot be denied that hyperplasia of the structure may be responsible for a variety of conditions, to which, from a clinical standpoint, some degree of significance must be conceded. As a rule, enlargement of the thymus gland is *associated* with changes in the spleen, the lymph glands, and in the adenoid tissue of the oropharyngeal cavity. The child is usually fat and the face looks pale and puffy; in fact, the *symptom-complex* suggests a condition which is designated **status lymphaticus.**

The abnormal enlargement of the thymus gland, which can be demonstrated by percussion, as the dulness is increased

and extends to the parasternal line in the second intercostal space, especially on the left side, may give rise to asthmatic pressure-symptoms resembling laryngospastic attacks (typic stridor of infants). Under these circumstances it is said that death sometimes takes place from compression of the trachea when the head is retracted.

Many of the cases, however, which are summarily described as cases of thymus death exhibit other organic changes, such as bronchitis, pulmonary edema, or auto-intoxication, and enlargement of the thymus gland in these cases does not constitute the chief cause of death.

Whenever the thymus gland appears from the existing symptoms to be enlarged, or an enlargement is discovered in the course of a physical examination, *therapeutic measures* to bring about a reduction in the size of the gland should be instituted. Internally, iodin preparations, the syrup of the iodid of iron, or iodferratose, 2 to 4 teaspoonfuls during the day, are prescribed; externally, compresses of iodin water or painting the region with equal parts of tincture of iodin and glycerin or tincture of galls, or 6 per cent. iodovasogen; or 1 or 2 daily inunctions with iodin ointments are employed (see STRUMA).

When the *symptoms* elicited in the course of a clinical examination render it more or less probable that the case is one of **status lymphaticus**, and the question of a surgical operation, with or without general anesthesia, comes up for consideration, a very guarded opinion should be given. The constitutional *treatment* has already been described in detail under the heading of SCROFULOSIS.

Thyreo-aplasia. See CRETINISM.

Toes, Supernumerary. See POLYDACTYLISM.

Tongue, Geographical (*Lingua Geographica; Pityriasis Linguæ*).—White masses of proliferating epithelium, separated by areas of normal tissue, develop usually on the tongue (see Fig. 159), more rarely on the buccal mucous

membrane, forming insular patterns with circular and linear outlines. In rare cases a connection between the condition and *scrofula* or some other disease can be demonstrated. From a *prognostic* standpoint it appears to be of little significance.

Accordingly *treatment* is unnecessary, not to mention that painting with a 1 to 2 per cent. solution of silver nitrate, lactic or boric acid, which has been suggested, has very little effect.

Tongue, Ulcer of. See ULCER, SUBLINGUAL.

Tongue-tie (*Adhæsio Linguæ; Ankyloglosson*).—Abnormal adhesion of the frenum linguæ to the outermost tip of the tongue, forming a heart-shaped notch in the member when it is protruded; or abnormal shortness of the membranous ligament preventing protrusion of the tongue as far as the alveolar process. The deformity sometimes interferes seriously with the movements of the tongue and in very rare cases may prevent the infant from sucking. It is only under the latter circumstances that the frenum linguæ should be divided with a pair of blunt scissors, although the operation is much more frequently desired by the parents than it is indicated. Only the membranous ligament, which must be tensely stretched, is to be divided. The hemorrhage is slight and is readily controlled by pressure with a pledget of cotton saturated, if necessary, with chlorid of iron. The act of sucking in itself acts as a mechanical styptic. When the adhesion of the frenum linguæ is abnormally great, articulation may be unfavorably affected when the child begins to talk.

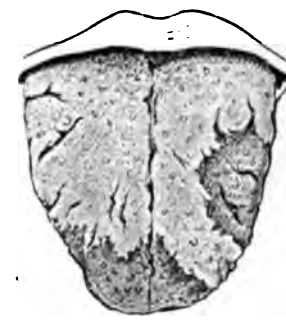


FIG. 159.—Geographical tongue.

Tonsillar Abscess. See ABSCESS, PERITONSILLAR.

Tonsils, Hypertrophy of (*Enlargement of the Tonsils*).—Enlargement of the tonsils may be hereditary or congenital, but in most cases it is acquired, being *due* to frequently recurring attacks of some form of angina, or following in the wake of infectious diseases. It is found chiefly in individuals otherwise predisposed to glandular disease.

The degree of hypertrophy varies. Sometimes the tonsils are so greatly enlarged that they touch in the media line and almost completely occlude the entrance to the pharynx.

The glands appear pale and are traversed by strands of connective tissue subdividing the gland substance into lobes; the surrounding blood-vessels are tortuous and dilated. A tenacious mucus accumulates in the crypts and on the posterior pharyngeal wall, and the odor of the breath is offensive. Depending upon the different degrees of glandular enlargement, the sequelæ of hypertrophy of the tonsils also vary in intensity.

The *chief disturbances* affect deglutition, articulation, respiration, and, under certain circumstances, the hearing. Accordingly the nutrition suffers, especially when swallowing is difficult, and there are frequent nausea and anorexia. Owing to the insufficient respiration imperfect development of the lungs and of the thoracic cage, or even deformity of the latter, is observed. The interference with the breathing, especially during sleep, makes the child restless and causes it to snore; speech becomes nasal and indistinct, and, owing to the pressure of the tonsils on the orifices of the Eustachian tubes, communication between the air and the inner ear is interrupted and deafness ensues. The patients often give the impression of stupidity.

In cases of moderate hypertrophy with slight secondary symptoms a daily application of a 5 to 10 to 20 per cent. solution of silver nitrate or of equal parts of tincture of iodin and glycerin (early when the stomach is empty), continued for some time, is all that is required. When the hypertrophy is great, the tonsils must be removed by the surgeon. Tonsillotomy is the surest means to guard against the various inflammatory diseases of the throat (diphtheria, phlegmonous

angina, etc.), which are so frequent in this condition and often endanger the patient's life.

Torticollis (*Wry-neck; Caput Obstipum*).—Acquired torticollis may be *due* to spondylitis of the cervical vertebræ (see SPONDYLITIS); it may be due to spastic contraction of the sternocleidomastoid, to muscular rheumatism of the muscles in the nape of the neck, to spasmus nutans (see Fig. 161); or it may rest upon a hysteric basis.

Intermittent torticollis with enlargement of the spleen and

FIG. 160.—Torticollis in a girl ten years of age. Congenital shortening and cicatricial change of the right sternocleidomastoid.

fever has frequently been observed as the expression of a malarial intoxication.

The most frequent form is that due to contracture of the sternocleidomastoid with tilting of the head toward the same, and rotation of the face toward the opposite side (see Figs. 160 and 162). This form of disease is either congenital or the result of an injury at birth—as, for example, laceration of the muscle in breech-presentations, or during a forceps delivery, or the formation of a hematoma which may either absorb or lead to the formation of firm, callous, cicatricial tissue.

Whenever a hematoma of the sternocleidomastoid fails to subside completely of its own accord, attempts should be made to correct the condition by means of pasteboard cravats, fixation-bandages, massage, and mechanical stretching of the shortened muscle. In advanced cases, operation is necessary in order to prevent scoliosis. Tenotomy of the cicatricial,

FIG. 161.—Torticollis in a child two years of age, the ultimate result of spasmus nutans lasting several months.

contracted portion of the muscle is performed, and if the condition recurs, the cicatricial tissue must be extirpated and the head fixed in an overcorrected position.

Tracheitis. See BRONCHITIS, CATARRHAL.

Tracheobronchial Catarrh. See BRONCHITIS, CATARRHAL.

Tracheobronchitis. See BRONCHITIS, CATARRHAL.

Transverse Myelitis. See MYELITIS.

Trousseau's Phenomenon.—Compression with the tip of the finger over the nerves in the bicipital groove is followed after a few seconds by a tetanic convulsion in the

FIG. 162.—Right-sided Duchenne-Erb palsy in a child two years of age, combined with torticollis of the same side (case of Prof. Redlich).

same, and sometimes in the other arm. The phenomenon is often found in tetany (*vide*).

Tuberculosis.—This is one of the most frequent and most destructive diseases of childhood; it is rarely hereditary, being in most cases acquired. One important contributory cause, which probably accounts for the disease being acquired in many cases, is that children whose parents are weak and

sickly or themselves the subjects of tuberculosis very rarely possess a vigorous, resistant constitution, and therefore do not offer sufficient resistance when they are later exposed to infection. The infectious micro-organisms usually enter with the inspired air. In this respect infants at the breast and children in the first years of life are especially exposed to the infection, because they come into such intimate contact with their parents or nurses; and if any of these be tuberculous, infection is almost certain to result. When the child has reached an age when it begins to creep about on the floor, there is the added danger of infection from the dust on the floor and the dirt that accumulates beneath the nails, especially in the case of habitual "thumb-suckers."

Koch's bacillus is now recognized as the *cause* of tuberculosis. It can enter the body not only through an injury or other lesion of the external skin, but also through the mucous membranes of the respiratory organs, the latter being probably the most frequent pathway.

From the skin or mucous membrane the bacilli make their way through the lymph paths into the neighboring glands. In the glands a local tuberculosis may develop; or the bacilli are still further propagated through the lymph and blood channels, and if the process is slow, chronic miliary tuberculosis and multiple tuberculous foci result; or if the micro-organisms invade the tissue in large numbers, an acute miliary tuberculosis is set up. Predisposing causes of either chronic or acute tuberculosis are unfavorable hygienic and dietetic conditions, a weak constitution, scrofulosis or other severe grave diseases, and especially the infectious diseases, such as measles, whooping-cough, and chicken-pox.

The *pathologic process* set up by the invasion of tubercle bacilli consists in an abundant multiplication of epithelioid cells, which coalesce and form the tubercle nodules. The latter may undergo caseous or calcareous degeneration, or become incapsulated as the result of inflammatory reaction of the connective tissue. In this condition the process must be regarded as latent; but if under the influence of one of the above-mentioned causes it is lighted up again and the

individual foci undergo softening, there develops the clinical picture of chronic or acute tuberculosis, which varies according to the seat of the disease.

In the great majority of cases the disease takes the form of tuberculosis of the cervical and bronchial glands or of the lungs, or, more rarely, of primary tuberculosis of the intestine, peritoneum, or brain; and, finally, a variety of local tuberculous processes in the skin, bones, and joints.

During the initial stage the nature of the disease can only be surmised in most chronic cases.

A change is noticed in the child's disposition; sleep is disturbed; the scalp is covered with perspiration; the skin is pale, dry, and scaly; the appetite is variable, and as a result the child ceases to grow and later becomes extremely emaciated. As a rule the temperature is elevated at times and the pulse is accelerated. Depending on the acuteness of the process and the severity of the individual case, these external symptoms, which at first are only suspected, become more and more prominent, and finally the temperature also shows that a distinct change has taken place in the progress of the disease, which in the beginning has often run a mild course for some time.

The exacerbations, which usually occur regularly and in the evening, increase in degree; the pulse becomes more frequent and smaller; and the secondary symptoms, which are still to be mentioned, become more severe, the pulmonary symptoms more pronounced, and the clinical picture of pulmonary phthisis, or, if the general symptoms are more widespread, that of an acute miliary tuberculosis is produced.

Tuberculosis localized in the bones and skin will be found discussed under their respective headings. In view of the great clinical importance of tuberculosis of the lungs (pulmonary phthisis) and intestinal and miliary tuberculosis, these conditions will now be described.

In many respects the *symptoms* of pulmonary tuberculosis, especially at the beginning of the disease, are identical with those of bronchial gland tuberculosis, which is usually present at the same time.

With progressive emaciation, enlargement of the cervical glands, evening rises of temperature, and dry, often paroxysmal cough, medium-sized and small mucous râles or bronchial breathing, or merely the signs of a peribronchitis are discovered in one or more portions of the lungs; the respirations are accelerated, and there is cyanosis of the face and of the terminal phalanges which seems out of proportion to the demonstrable pulmonary signs.

When there is great consolidation of the individual foci and they are sufficiently large in extent, they also reveal their presence by dulness on percussion. If softening takes place and the focus communicates with a bronchus (pseudocavity), or bronchiectasis occurs from pressure on a bronchial branch, cavernous breathing gradually develops and the percussion-note takes on the corresponding physical properties. The dyspnea increases, secondary cyanosis, edema of the face and of the extremities, due to cardiac weakness, and, occasionally, pneumothorax, and cerebral or intestinal symptoms make their appearance, and death takes place after a duration of weeks.

Tuberculous disease of the intestines, which is rarely primary, gives rise to the picture of a chronic enteritis, with the characteristic tuberculous rise of temperature. The diagnosis can only be made by the demonstration of tuberculous disease in other parts of the body, swelling of the mesenteric or retroperitoneal glands, or the finding of tubercle bacilli in the stools.

The *clinical course* of acute miliary tuberculosis, which is characterized by the occurrence of hyperpyrexia and a number of secondary symptoms due to the tuberculous infection, is either subacute or acute, and in many cases the disease is erroneously diagnosed as typhoid.

In many cases it is exceedingly difficult not only to make a diagnosis, but even to demonstrate the existence of enough suspicious symptoms to justify the assumption of tuberculosis. The history of tuberculous disease among the child's surroundings; the antecedent history, especially as regards many infectious diseases; the loss of body-weight and appetite

without sufficient explanation; cough; pain between the shoulder-blades; and febrile phenomena,—all these factors must be taken into consideration.

On inspection, signs of a former or still existing scrofulous disease of the skin or bones, such as a flat chest and disseminated, hard, glandular enlargements may be discovered, and the diagnosis is then confirmed by finding scattered broncho-vesicular râles with circumscribed areas of dulness in the lower lobes or at the apices.

The *diagnosis* can be established beyond a doubt by examining the expectorated excretion for tubercle bacilli, as a positive finding is absolute proof of the existence of the disease; but even if the result is negative, tuberculosis cannot by any means be excluded if suspicious clinical symptoms are present.

The *prognosis* of a tuberculous disease, wherever the primary focus may be, must always be regarded as extremely doubtful. Miliary tuberculosis is practically always fatal.

The chief aim of all therapeutic and prophylactic procedures is to prevent the disease from being transmitted from the patient to others. Since infection is practically always derived from a tuberculous subject, strict supervision of the health of our patients becomes of the highest importance. Whenever there is even a suspicion of tuberculosis, those who come in contact with the child must be properly instructed and warned against the danger of possible contagion. Children suspected of tuberculosis ought to be at least temporarily excluded from attendance at school, and for this purpose our schools absolutely require medical inspectors.

Popular education in regard to precautionary measures, which may at last penetrate to the more ignorant classes of society, may some day bear fruit.

It is of more immediate importance, however, to strive for a more general improvement of dwelling-houses and conditions of life generally as regards diet and hygiene, and thus prevent infection or control its spread when it has already taken place.

For these reasons patients should be advised to live in

some healthy region where the air is free from dust, if possible in a health resort or in a sanatorium; or the justly lauded open-air treatment, which should be as thoroughgoing as possible, may be enjoined during the summer and even during the rigorous season of the year.

Precautions such as these are indicated not only in the case of children who are suspected of tuberculosis, but also in the case of those who are exposed to the disease; it is in the latter class particularly that one should never neglect hygienic measures and gymnastic exercises calculated to strengthen and harden the body and increase its resistance to disease; but at the same time such measures must not be overdone. It is hardly necessary to go into a lengthy discussion of these matters; the above-mentioned indications are best satisfied by providing suitable, nutritious food adapted to the age, appetite, and personal taste of the individual; a diet containing as much fat as possible is warmly recommended.

The dietetic and regiminal *treatment* may be supplemented with any of the preparations that are believed to have an influence on the tuberculous disease. Of these the following may be mentioned: creosotal 2–5 to 15 drops three times a day; duotal 0.5 to 1.5 gm. (7½–23 gr.) per diem; guaiacol carbonate in the dose of 0.25 gm. (4 gr.), 2 to 3 powders a day; thiocol 0.20 to 0.50 gm. (3–7½ gr.) to the dose, or sirolin syrup, which is derived from this preparation, 3 to 4 dessertspoonfuls; sulphosot-syrup, 1 or 2 teaspoonfuls, and compound syrup of guaiacol (Hell) in the same dose. As in the case of scrofulous children, cod-liver oil with or without creosotal; lipanin; oil of sesame; Natterer's cod-liver oil tablets; Liebe's malt extract with cod-liver oil; any of the good cod-liver oil emulsions; or the vin Vivien may be employed. Raw meat-juice is now also recommended. It is obtained by cutting the meat up in small pieces and allowing it to macerate for three-quarters of an hour with a little distilled water and then expressing the juice; 100 gm. (3 oz.) of meat in this way yield about 15 to 20 c.c. (4–5 fl. dr.) of meat-juice.

Tuberculosis, Glandular. See BRONCHIAL GLAND DISEASE.

Tuberculosis of the Vertebræ. See SPONDYLITIS TUBERCULOSA.

Tuberculous Meningitis. See MENINGITIS, TUBERCULOUS.

Tuberculous Peritonitis. See PERITONITIS, TUBERCULOUS.

Tuberculous Spondylitis. See SPONDYLITIS TUBERCULOSA.

Tumor, Blood. See ANGIOMA.

Tumor, Cerebral. See BRAIN TUMOR.

Typhlitis. See APPENDICITIS.

Typhoid Fever (*Enteric Fever*).—The *onset* and *clinical course* of typhoid fever in children is frequently so atypical and abortive that the disease is easily mistaken for gastric catarrh, and, indeed, the error is a pardonable one. It is only after the case has lasted for some time, or the development of other secondary symptoms has given it a more distinctive character, that the diagnosis can be made positively without the aid of other methods of clinical examination.

Typhoid fever rarely develops without marked prodromal symptoms. As a rule, the onset is gradual and attended by disturbance of the general health, headache, restless sleep, anorexia and sometimes vomiting, constipation, or diarrhea. These *symptoms* gradually become more and more pronounced, and the temperature, from being moderately elevated, gradually rises higher and higher, and exhibits evening exacerbations and morning remissions. When the disease is once established, the temperature remains high for a variable

length of time and shows but slight remissions. After this febrile period, which usually lasts for from two to four weeks, the temperature gradually begins to come down, the morning temperature becoming almost normal, while the evening temperature shows only a slight rise.

This is the typic course of the fever, but it may be interrupted by the so-called inverse type with high temperatures in the morning and remissions in the evening. Any sudden rise of temperature to an abnormal height, or a rapid fall, indicates the occurrence of a *complication*.

The pulse-frequency is usually, although not always, proportionate to the temperature, and any sudden alteration in this relation also points to a complication.

It is probably only in the worst cases that enlargement of the spleen can be demonstrated by palpation before the end of the first week; it is usually sensitive to pressure. At this time, too, the characteristic rose-spots make their appearance, usually upon the abdomen alone, but not infrequently upon other portions of the trunk, and even rarely on the extremities. They are pale rose-colored discrete maculo-papules, 2 to 4 mm. in diameter, which disappear for a few seconds when pressed upon by the finger or when the skin about them is put upon the stretch. They appear in successive crops, each spot persisting for two or three days, and gradually fading; they rarely appear after the third week.

As the temperature rises the nervous disturbances increase in the same proportion, although the latter are extremely variable as regards their severity.

As a rule typhoid-fever patients exhibit great apathy; sleep is disturbed and sometimes accompanied by violent or muttering delirium. Sometimes these cerebral phenomena are exaggerated, of the so-called meningitic type, and Kernig's symptom (*vide*) is present.

As in all grave diseases there is complete anorexia and the patient's chief complaint is an exaggerated thirst. The tongue is usually dry and covered with a white or brown fur along the middle; the dry and fissured lips are covered with sordes.

Sometimes at the beginning of the first week, but more usually toward the end, the stools become diarrheal, watery, of a light green color or of the color of pea soup, and the diarrhea is interrupted occasionally by periods of constipation. There is meteorism, slight at first and later increasing in severity, and the abdomen is distinctly sensitive to pressure, especially in the ileocecal region. An admixture of purulent or sanguineous mucus in the stool or bloody evacuations indicate ulcerative processes in the intestinal follicles or their perforation.

The urine is concentrated and after the second week gives the diazo-reaction (*vide*).

Catarrhal affections of the respiratory organs almost always accompany typhoid fever and may give rise to a variety of complications, such as bronchitis and catarrhal or hypostatic pneumonia, which may in fact develop during the course of any case of typhoid fever. The extent and severity of the complication, as well as of the primary disease, manifest themselves by corresponding rises in the temperature.

The *prognosis* of typhoid fever, a disease that frequently runs an extremely mild course and at other times is attended by the gravest symptoms, may be interfered with by the development of complications in other organs of the body. Among these may be named metastatic swelling or suppuration of the parotid gland, noma, diseases of the heart-muscle and endocardium, periodic aphasia with unilateral palsies, retention of urine, purulent inflammation of the meninges and of the joints or bones, and, if the emaciation is very great, decubitus ulcers or even erysipelas. Relapses sometimes occur toward the end of the third or fourth week, and are usually due to the severity of the infection or occasionally to improper diet.

In a normal case the fever and other secondary symptoms subside after a certain time, depending on the intensity of the disease; the appetite improves; profuse sweats often take place; and convalescence, which may be extremely slow, is established.

The *diagnosis* of typhoid fever can be made clinically only when the above-mentioned striking phenomena are found to

exist together; an exception is formed by those cases which run either a protracted febrile course without the usual concomitant symptoms or one of short duration with only insignificant elevations of temperature. An absolutely positive diagnosis can only be made, however, by demonstrating the cause of typhoid fever (Eberth's bacillus) microscopically or by means of cultures of blood obtained from the rose-spots or from the urine or feces. But in addition to these bacteriologic methods we have at our disposal other clinical aids, such as the diazo-reaction and especially the Widal-Gruber serum-reaction (*vide*), which should always be employed in order to confirm the diagnosis.

The *treatment* of an individual case of typhoid fever depends on the degree of severity. As the initial symptoms resemble a digestive disturbance or intestinal intoxication, the most important indication is to restrict the diet and allow only liquid foods, such as thick soups, or, if diarrhea is present from the beginning, acorn-cocoa or acorn-coffee with milk.

In many respects the treatment is purely symptomatic and directed toward the relief by means of suitable remedies of the various secondary symptoms emanating from the nervous system, the lungs, and the intestines.

In view of the existing intestinal disturbance one may give 1 or 2 doses of calomel, the size of which must be adapted to the patient's age (0.02 to 0.05 gm.—$\frac{1}{3}$–$\frac{3}{4}$ gr.); or creosote 20 drops to 100 c.c. (3 fl. oz.) of a mucilaginous mixture, 1 teaspoonful every three hours; or ichthoform 0.10 to 0.30 gm. ($1\frac{1}{2}$–$4\frac{1}{2}$ gr.) three times a day. After the disease has progressed beyond the prodromal stage these drugs must be discontinued, and nothing remains to be done but expectant treatment, with due attention to any complications that may arise. The hyperpyrexia, however, must be constantly combated by means of cold sponging at frequent intervals, or general wet packs every quarter of an hour, until the temperature comes down. Cold compresses or the ice-cap should be kept constantly applied to the head. If the strength of the heart is not impaired, antipyretics in suitable doses may be

employed in the beginning. Lactophenin, in the dose of 0.10 to 0.50 gm. (1½–7½ gr.), depending on the child's age and the height of the fever, is well spoken of in this respect.

The bath treatment, which is so commonly employed in the case of adults, may be employed in the case of children when the temperature is abnormally high, and especially when there are psychic disturbances. The bath should have a temperature of 26° R. (90.5° F.), which may be gradually reduced to 24° or 22° R. (86°–81.5° F.). The duration of the bath should be from five to ten minutes, and no more than four should be administered in the course of the day. These baths often exert a favorable influence on the mental excitement and the patient's general condition. To guard against collapse the patient should be given a little wine or tea with cognac before and after the bath.

Aside from complications in the respiratory organs, for the treatment of which the reader is referred to the corresponding headings, the treatment of the intestinal tract requires special attention. If the stools are numerous and watery, the various tannin-albumin preparations, such as honthin, tannigen, tannalbin; or bismuth preparations, especially the soluble bismuth phosphate, in the dose of 0.10 to 0.30 gm. (1½–4½ gr.), several times a day, are prescribed. Intestinal hemorrhage calls for the administration of solution of chlorid of iron, 10–20 drops to 100 c.c. (3 fl. oz.); acetate of lead, 0.003 to 0.02 gm. (1/20–⅓ gr.), every two or three hours, and ice-water, iced milk, or 2 per cent. gelatin-water as a beverage.

The development of bed-sores may be guarded against by proper care of the bed, changing the patient's position from time to time, and by washing the parts with vinegar-water. Wherever a red spot appears on the skin it should be covered with soap plaster or camphor-zinc ointment, and protected against further pressure with a water pillow or a ring pad of cotton.

The importance of care in the *diet* of typhoid-fever patients cannot be too strongly emphasized, particularly during the stage of convalescence, when the appetite is often enormously increased. Even after the fever has entirely dis-

appeared and the stools are irreproachable, the same liquid diet must be continued for at least a week longer, after which it may be gradually varied by the addition of meat purées (soups) once and later twice a day, foods prepared with milk, or light custards. After the third week following defervescence more solid food may be given, but with due regard to the condition of the bowels. Constipation, when it occurs, may be relieved with rhubarb, castor oil, or some other mild laxative.

In typhoid fever, as in all other infectious diseases, due attention must be paid to *prophylaxis*. As this consists mainly in preventing the spread of the disease, strict orders must be given to disinfect the patient's discharges with lysol, crude carbolic acid, bacillol, creolin, or bichlorid of mercury. It is needless to say that the patient's body-linen also requires thorough disinfection for twenty-four hours, followed by several hours' boiling. The nurse and attendants can protect themselves against the danger of infection by observing scrupulous cleanliness.

Typhoid Fever, Widal Serum-reaction in. See WIDAL SERUM-REACTION.

Ulcer, Sublingual.—Sometimes the frenulum of the tongue is injured by the lower incisors and suffers loss of the

FIG. 163.—Sublingual ulcer in a little girl four years of age, with chronic pneumonia and bronchiectasis following diphtheria and tracheotomy.

superficial layer of epithelium, which may gradually go on to the formation of an extensive ulcer covered with a lardaceous exudate. The most frequent *cause* of sublingual ulcer is

whooping-cough, as the frenulum is exposed to laceration by the incisors during a paroxysm of cough, and the wound is prevented from healing by the constant repetition of the traumatism. Sublingual ulcers are also observed in cases of severe cough from other causes and in thumb-suckers. The sublingual ulcer shown in Fig. 163 owed its origin to the violent cough in a case of bronchiectasis and chronic pneumonia following diphtheria.

The *treatment* consists in touching the ulcer with a 2 to 5 per cent. solution of silver nitrate, but in many cases the ulcer refuses to heal unless the cause can be removed. The pain from the ulcer, which is felt chiefly during nursing, may be mitigated by a superficial application of a 2 per cent. solution of cocain or by dusting with orthoform.

Ulcerative Stomatitis. See STOMATITIS, ULCERATIVE.

Umbilical Hemorrhage. See UMBILICUS, DISEASES OF.

Umbilical Hernia. See UMBILICUS, DISEASES OF.

Umbilicus, Diseases of.—*Treatment of the Umbilical Cord.*—The laws of asepsis should be obeyed in every detail, not only in ligating the umbilical cord, but also during the subsequent treatment of the stump until the wound has entirely healed. The umbilical stump especially requires the most careful watching and protection, since rough handling or excessive constriction of the stump may produce secondary inflammation. It should be as short as possible, and the chief requisites to be fulfilled in its treatment are scrupulous cleanliness and precaution against putrefaction. The umbilical stump should undergo mummification and should be protected against the invasion of bacteria, which is best accomplished by allowing free access to the air—*i. e.*, by covering the stump with several layers of sterile absorbent gauze (dermatol or xeroform gauze). This is to be covered with the binder, which should not, as is still the custom, be made of linen, but should consist of absorbent gauze, mull, or calico. The

binder must not be covered with protective rubber and must be changed as soon as it becomes moist.

In order to hasten the process of drying the umbilical stump and to guard it against infection, it is well to apply an antiseptic and desiccating dusting-powder. The following may be recommended: dermatol, xeroform, boric acid, or salicylic acid and talcum powder, 1 to 5 gm. But one or the other of the dressings mentioned above should be applied constantly until the umbilicus is completely covered with skin.

The question whether to give a daily bath before the umbilicus is healed has given rise to much controversy. Systematic comparisons by various observers between bathed and unbathed children show that the daily bathing of a newborn infant is a custom to be encouraged because it neither interferes with the uninterrupted, smooth healing of the umbilical wound nor delays the process of mummification, nor does bathing interfere with the child's growth and general development. In any case, it is well to use only boiled water for the bath, to see that the bath-tub is kept clean, and to use clean linen for every bath.

Many of the dressings and other methods of treating the umbilicus can only be described as useless refinements, which ought to have no place in the hygiene of the newborn.

A child suffering from disease of the navel must in every case be taken away from its mother, and, conversely, a newborn infant must be separated from its mother if the latter is suffering from puerperal fever. The attendants should be instructed in regard to the possibility of infection, the importance of strict cleanliness of the hands, and the destruction by burning of the soiled dressings.

Amnion-navel, Skin- or Flesh-navel.—Sometimes, as a result of some embryonal defect in the closure of the abdominal wall, the skin fails to extend as far as the umbilicus, and the cord is surrounded by an area of variable size which is covered with amniotic instead of skin tissue. This condition is called amnion-navel (Fig. 164). When the skin of the abdomen is not limited by the insertion of the umbilical cord,

FIG. 164.—Amnion-navel.

but extends several centimeters along the cord, a long strand of skin capped by the umbilical scar remains after separation of the stump. This condition is called skin- or cutis-navel

FIG. 165.—Skin-navel.

(Fig. 165). The cutaneous defect in amnion-navel is not extensive and usually heals kindly if the part is covered with

an aseptic protective dressing or with a 5 per cent. boric acid, or a ½ to 1 per cent. silver nitrate ointment.

Skin-navel requires no treatment and merely represents a permanent blemish which can only be removed by operation. If a **fungus umbilici** (see below) develops at the bottom of the skin-fold, it must be removed; if the protruding bag of skin contains an umbilical hernia, the latter must be subjected to appropriate treatment (see UMBILICAL HERNIA).

Arteritis and Phlebitis Umbilicalis.—Inflammation of the umbilical vessels is always *due* to some one of a great variety of micro-organisms, and the infection in most cases leads secondarily to general sepsis. It may be due either to pollution and putrefaction of the umbilical stump or to neglect of the umbilical wound. The infection either begins in the perivascular connective tissue and spreads to the vessel or arises from a clot within the vessel after suppuration has taken place. So far as the fatal termination is concerned it is quite immaterial whether the infection involves the umbilical arteries, umbilical vein, or, as in most cases, all the vessels of the cord; the only difference in the course of the disease is that in umbilical arteritis, which is very much more frequent than any other form, the resulting sepsis runs a more rapid course than in phlebitis, which sometimes runs a protracted course with parenchymatous disease of the liver and secondary pneumonia and peritonitis.

Strictly speaking, there is no treatment of this disease, the *prognosis* of which must be regarded as unfavorable. As in the care of the navel, all those prophylactic measures which are calculated to prevent the possibility of the disease taking place must be strictly observed.

Blennorrhea of the Navel.—This relatively frequent condition is *due* to delayed skinning over of the umbilical stump. The inner folds of the umbilicus are not covered with epidermis and present the appearance of mucous membrane; a purulent secretion sometimes accumulates in the umbilical folds underneath the crusts which form and may lead to secondary inflammation of the surrounding skin. In view of the danger to the mother from pus-infection from this source,

the most scrupulous cleanliness must be observed in the *treatment* of this condition, which in itself is quite free from danger.

In order to prevent the secretions from accumulating, the part is washed daily with Goulard's extract, dilute aluminum acetate, or a ½ per cent. solution of zinc sulphate; or it may be painted daily with a 1 to 2 per cent. solution of silver nitrate and dusted with dermatol or airol. Until complete healing has taken place the navel should be kept covered with a layer of dermatol or airol gauze held in place with a few turns of a gauze bandage.

Umbilical Hemorrhage.—Hemorrhage may follow careless ligation of the cord or may occur in children who are born in asphyxia, because the lungs do not expand and the muscular layer of the umbilical vessels fails to contract, so that the vessels continue to pulsate forcibly. Another much more dangerous form of umbilical hemorrhage is the so-called idiopathic variety, which takes place after the separation of the stump—that is, between the fifth and the tenth day. The bleeding in this case is parenchymatous; the blood oozes either continuously or intermittently from the umbilical wound, until, after several hours or days, or sometimes even after two or three weeks, the child goes into collapse, followed by profound coma, and finally dies.

In the first-mentioned forms of umbilical hemorrhage, which are usually quite benign, the bleeding is controlled by applying another ligature and tying it very tightly, or by cauterizing the umbilical stump with the Paquelin cautery or with a caustic solution. In addition the asphyxia must be combated by means of suitable procedures; in the case of premature children, by applying heat to the body, and by at once beginning the administration of food and stimulants. Locally, cotton saturated with chlorid of iron, or a tampon of absorbent or dermatol gauze, is applied.

The *treatment* of parenchymatous hemorrhage in the rarest cases offers any chance of success. The children are usually septic, syphilitic, or the subjects of hereditary hemophilia. An attempt may, however, be made to control the

hemorrhage by cauterizing the navel, by applying a tampon saturated with iron chlorid or concentrated ferropyrin solution or liquid plaster of Paris. Surgeons recommend transfixing the abdominal wall around the navel with two hair-lip pins (Karlsbad needles), which are introduced in different directions, so as to cross one another, and the application of a figure-of-eight or a crossed ligature.

In accordance with modern methods of treating hemorrhage, from 30 to 40 gm. of a 2 per cent. solution of sterile gelatin in physiologic salt solution may be injected subcutaneously, or a corresponding quantity administered by the mouth or per rectum.

FIG. 166.—Umbilical fungus.

The exhaustion which follows every kind of hemorrhage must be combated as rapidly as possible by means of stimulants, the institution of suitable feeding, and by protecting the baby against loss of heat by surrounding it with warm packs or hot-water bottles.

Umbilical Fungus (*Fungus or Granuloma Umbilici; Sarcomphalos*).—This condition is due to the same *causes* as blennorrhea—delayed skinning over of the umbilical wound, attended by the proliferation of granulation tissue. The raspberry-like tumor often attains the size of a cherry; it may be sessile or, as the name implies, elevated on a stalk like a mushroom. It is sometimes hidden between the external umbilical folds, but is often seen projecting from among them (Fig. 166). As the granuloma bleeds at the slightest touch, a purulent secretion is kept up in the internal umbilical folds, which lasts until the granulation tumor has been removed.

Small tumors, from the size of a pin-head to that of a millet-seed, may be touched once or twice with a solid stick and

dusted with alum, dermatol, or airol powder, after which the navel is covered with a protective dressing (see BLENORRHEA OF THE NAVEL).

Pedunculated umbilical fungi should be tied off at the base as soon as possible with aseptic silk. After they have separated, the stump may be touched with the solid stick.

Meckel's Diverticulum.—Meckel's diverticulum represents the remains of the omphalo-mesenteric duct, and may easily be mistaken for an umbilical fungus. The surface of the diverticulum is, of course, covered with mucous membrane. It always presents at the center a funnel-shaped entrance, through which a probe can be introduced to a distance of a

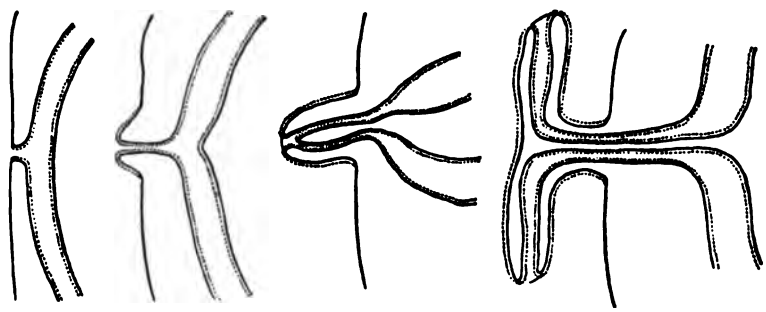


FIG. 167.—Diagrammatic representation of Meckel's diverticulum, showing various grades of protrusion. The dotted line corresponds to the mucous membrane.

few centimeters. In severe cases a sausage-shaped tumor protrudes (Fig. 167).

Umbilical Hernia.—Two varieties are distinguished: the congenital, or hernia of the umbilical cord (*hernia funiculi umbilicalis*, *omphalocele congenita*), and the acquired umbilical hernia (*hernia umbilicalis acquisita*).

1. *Congenital umbilical hernia* is the result of a malformation, namely, arrest of development of the abdominal parietes and failure to unite. A cleft is formed through which the hernial sac, consisting partly of amnion and partly of parietal peritoneum, protrudes. The contents of the hernia consists of loops of intestine and frequently the liver (Fig. 168). If the umbilical cord separates or the attenuated

hernial sac ruptures, the viscera prolapse, gangrene and peritonitis develop and destroy the child's life. Spontaneous recovery is extremely rare; on the other hand, a cure has frequently been effected by means of a radical operation. But not infrequently there are other grave malformations which make it impossible to save the child's life.

2. *Acquired Umbilical Hernia.*—Although this form is called acquired, it appears to require for its production a certain predisposition, consisting in congenital enlargement of the um-

FIG. 168.—Congenital umbilical hernia: Spontaneous rupture several days after birth, followed by prolapse of the liver and of the small intestine.

bilical ring, flaccidity of the abdominal muscles, and diastasis of the recti.

The exciting *cause* may be any condition in which intra-abdominal pressure is abnormally increased, such as intestinal disturbances which cause colic, constipation, fissure in ano, phimosis, severe bronchial catarrh, and, especially, whooping-cough.

The hernial protrusion is at first small, but if the existing causes continue, it gradually enlarges. Some hernias attain the size of a hen's egg. As the tumor grows the skin becomes thinner and thinner, and the original umbilical folds at the apex of the hernia are often indicated merely by pigmentation.

The contents of the hernial sac usually consists of loops

of small intestine which can be replaced with the production of a gurgling sound.

The sharp rim of the umbilical ring distended to correspond with the size of the hernia can be felt with the finger. Incarceration very rarely takes place.

The *treatment* consists mainly in guarding against the causes of umbilical hernia. Over the hernia itself an adhesive dressing is applied. The American rubber adhesive plaster, which does not irritate the skin, or zinc-plaster-mull, Beiersdorf's leukoplast or Durinum's navel-dressing, may be

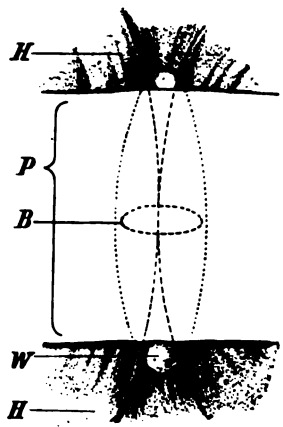


FIG. 169.

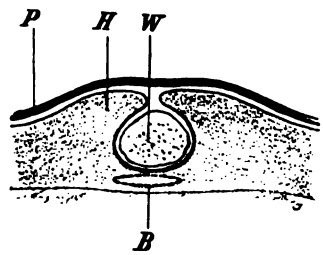


FIG. 170.

FIGS. 169 and 170.—Diagram showing the ordinary dressing for umbilical hernia: Fig. 169, front view; Fig. 170, horizontal section: *B*, hernial opening covered with a long cotton plug, *W*, over which the two skin folds *H* are united by means of the adhesive strip *P*.

used. The simplest and most rational method of applying the dressing consists in picking up two longitudinal folds on each side of the umbilical ring after the hernia has been replaced, and holding these folds together by means of strips of adhesive plaster applied either parallel to one another or crosswise. By this means the round or oval opening of the hernia is converted into a narrow slit in the median line of the abdomen, through which the hernia is unable to escape. For a time, and until complete adhesion has taken place, a circular binder should be applied over the adhesive dressing. The plaster dressing need not interfere with the child's daily

bath. In the case of larger hernias a plug of cotton is laid lengthwise between the two skin folds, and the latter are drawn together with adhesive strips until they touch over the compress of cotton (Figs. 169 and 170).

It is useless to put a truss on a small child, and radical operation, which has recently been considered, is rarely advised by the physician, in spite of the improvements in the technic, and still more rarely desired by the family and friends.

Incarcerated umbilical hernias, however, demand immediate operation. In regard to the healing of umbilical hernias in myxedema, see under heading of that disease.

Omphalitis.—This inflammatory process of the umbilical stump or of the umbilical vessels, as well as other inflammations to be mentioned later, is due to infection by a variety of germs.

In the milder cases, consisting merely of an ulcerative form of blennorrhea of the umbilicus, the general health is but little, if at all, affected, but in those cases in which the ulceration is not due to delayed healing of the wound the concomitant symptoms usually point to a septic infection. In such cases the umbilical disease presents a different picture: the ulcerative process, instead of being circumscribed, spreads not only laterally to the skin but also to the deeper tissues, and is attended by a rise in temperature and general constitutional disturbance. Even under these circumstances, however, the disease may be arrested; but usually the infection of the umbilical vessels goes on to septic inflammation with secondary universal sepsis.

Under unfavorable hygienic conditions, and in the case of atrophic children, an omphalitis which at first was localized goes on to gangrene of the navel, showing itself in grayish-black discoloration of the skin, absence of the line of reactive demarcation of the skin, and the presence of a fetid odor; a large defect often remains in the skin after the wound has healed. The chief danger of infectious omphalitis lies in the possibility of extension of the process and the formation of gangrene, phlegmonous inflammation of the skin with abscess,

and, if the process extends downward, rapidly fatal peritonitis (Fig. 171).

A large part of the *treatment* of simple omphalitis consists in the proper aseptic and hygienic treatment of the umbilical stump and of the umbilical folds after separation of the stump, and is therefore prophylactic. As soon as an actively secreting ulcer makes its appearance, with inflammatory reaction showing itself in redness or infiltration of the surrounding skin, rigorous antiseptic measures must be adopted. In milder cases compresses wrung out of 2 per cent. boric acid, Burow's solution, 1 : 4 of water, or even a 1 : 2000 solution

FIG. 171.—Gangrene of the navel.

of bichlorid of mercury may be used. The surface of the ulcer should be covered with an antiseptic dusting-powder, such as salicylic acid and Venetian talcum, 1 : 10, iodoform, dermatol, or airol. If the wound continues to break down and fails to show any inflammatory reaction, it must be painted with some stimulating substance such as wine of camphor.

Internal medication consists chiefly in the administration of stimulants, and, when possible, the child should receive breast milk.

Children suffering from sepsis should receive a daily bath

and should always be separated from the mother during the puerperium.

Undescended Testicles. See CRYPTORCHIDISM.

Universal Folliculitis. See FURUNCULOSIS.

Uric-acid Infarct and Nephrolithiasis.—The urine of newborn infants and older babies sometimes contains gravelly, yellowish-red granules, which consist of uric acid. In older children an increase of uric acid is observed in the concentrated urine of febrile diseases, after bodily exertion, and when the diet contains too much meat; but uric acid may also be increased in the absence of these causes, and the phenomenon in such cases is probably due to an inherited predisposition. Sometimes uric acid concretions are formed, the passage of which gives rise to renal colic. In the pelvis of the kidney these uric-acid concretions may cause pyelitis, and in the bladder, cystitis.

The increased excretion of uric acid in infants manifests itself by an orange-yellow discoloration of the diapers, and in older children by pigmentation of the urinary sediment (lateritious sediment), the *diagnosis* being subsequently confirmed by microscopic and chemical examination. For the *treatment*, see PYELITIS.

Urine, Bloody. See HEMOGLOBINURIA, and NEPHRITIS, ACUTE.

Urine, Indican in. See INDICANURIA.

Urticaria (*Hives; Nettlerash*).—As the result of certain *causes* which lead to the production of erythema, wheals surrounded by inflammatory areolas make their appearance, attended by severe itching and sometimes initial fever. The boundaries of adjacent lesions may unite, and in this way extensive regions of the skin are sometimes attacked, producing a great variety of different patterns. Owing to the extensive

erythematous inflammation, edema frequently develops, especially on the face, in the region of the joints, and on the genitalia.

The disease is an angioneurosis which in predisposed individuals is brought on either by external causes, such as bites of insects, rough clothing, or the presence of some other eruption that causes itching, or to internal causes, which include chronic constipation and the ingestion not only of certain beverages and articles of food, but also of a number of drugs, such as antipyrin, salipyrin, sodium salicylate, and santonin.

In addition, certain other purely toxic causes should be mentioned, such as gastro-intestinal intoxications, poisoning with tainted sausage or meat, vaccination, and serum injections.

Urticaria usually runs an acute course; but in a few cases constant relapses take place from some unknown or insignificant cause, and the disease assumes a chronic type.

The urticaria that accompanies intermittent fever is a special variety which is peculiar in that its appearance is associated with a rise of temperature.

In addition to guarding as much as possible against the various causes enumerated above, the *treatment* consists in relieving the itching, which is often very distressing and interferes with the patient's rest. The skin may be washed with vinegar-water or some of the following alcoholic mixtures may be applied: 1 per cent. salicylic acid; 5 per cent. menthol or ichthyol; or

℞ Æth. sulph., 2.5 (m xxxvii);
Aconitini, 1.0 (gr. xv);
Spirit. lavandulæ, 100.0 (f℥iij);
Spirit. vini gallic., 150.0 (℥ivss).—M.

Or,

℞ Acid. salicyl., 1.0 (gr. xv);
Acid. carbolic., 2.0 (gr. xxx);
Glycerin., 50.0 (℥iss);
Spirit. vini, 100.0 (f℥iij).—M.

Or,

℞ Balsam Peruvian., 5.0 (℥j);
Glycerin., 10.0 (℥ij).—M.

Or,

℞ Thigenol, 20.0 (℥v);
Aq. destill.,
Spirit. vini rectific., āā 50.0 (f℥iss).—M.

Lukewarm starch-baths or alum-baths may also be employed.

In the rare cases in which the etiology remains unknown, a drinking-cure with Karlsbad or Vichy water and, to inhibit

FIG. 172.

FIG. 173.

FIGS. 172 and 173.—Child six months of age with urticaria pigmentosa dating from birth.

the fermentative process in the intestine, internally ichthalbin, ichthyol, menthol, in doses of 0.25 to 0.5 gm. (4–7½ gr.); creosotal and xeroform, 0.50–2 gm. to 100 c.c. (7½–30 gr. to 3 fl. oz.) of mucilaginous mixture with 10 c.c. (2½ fl. dr.) of syrup of mint, several times a day, should be prescribed.

The term **urticaria pigmentosa** is used to indicate a very peculiar form of the disease, the *clinical features* of which are

its inception during earliest childhood and the presence of numerous spots of brown pigmentation scattered over the entire body (Figs. 172, 173). The pigmentation follows the urticarial lesions and is due to the constant urticarial irritation of the skin (by rubbing the brown spots can be converted into typical urticarial wheals). Spontaneous recovery frequently takes place at the age of puberty, but not infrequently the disease persists to the age of twenty or forty. From a diagnostic standpoint it should be mentioned that urticaria pigmentosa might be confused with congenital lues. On careful examination, however, many differential points will be discovered which will suffice to eliminate such an error.

Vaccination.—The purpose of vaccination, one of the greatest boons conferred on mankind by preventive medicine, is to produce an immunity against smallpox which protects the individual for years. The immunizing power of vaccination is proved by countless statistics. Hence, even in the absence of compulsory vaccination, the precaution should never be neglected if the physician does not wish to charge his conscience with a heavy crime against his fellow man.

Vaccination is now performed exclusively with so-called animal lymph (material derived from cowpox). The strictest aseptic precautions must be observed in preparing as well as in applying the lymph.

A baby should not be vaccinated before the sixth week. Exceptions to this rule are when there is special danger of smallpox or the child is to be taken on a journey into a region suspected to be infected with the disease. Vaccination is preferably performed during the warmer months. For reasons which will be discussed later, sickly children, children suffering from cutaneous affections attended by itching (eczema, prurigo, etc.) and bleeders, are to be temporarily excluded from vaccination. Before proceeding to vaccinate, the site selected, either on the right or left arm or the outer side of the thigh or leg, must be cleansed with soap and water, alcohol, and ether. The instruments used for vaccination must be either boiled or, if they are made of platiniridium,

heated to a red heat. A small quantity of virus is then placed on the point and two (or at the most three) superficial scratches, at least 1 cm. apart, are made in the skin. The excess of lymph is removed with absorbent gauze and a protective dressing applied. The choice of the dressing depends upon individual preference or custom. Either dermatol- or borated-gauze with a spica bandage of the arm, or a vaccination shield or a cotton dressing passing underneath the arm, and crossed on the shoulders, may be applied. A protective dressing with tegmin, reinforced with cotton in the way just described, is very satisfactory.

FIG. 174.—Normal vaccination pustule on the sixth day after vaccination.

In a normal case a papular lesion develops at the vaccination-site on the third or fourth day and becomes converted into a vesicle filled with a transparent fluid, which by the seventh day presents the characteristic appearance of an umbilicated pustule (see Fig. 174). As the contents of the vesicle become turbid, the surrounding inflammatory areola, which is at first sharply defined, enlarges, and the process reaches its height between the eighth and tenth day; after this it rapidly subsides, and by the end of the second week the lesion (pock) is completely dried up and all secondary inflammatory symptoms have disappeared. About the end of the third week the crust separates from the vaccination-pustule, leaving a small ulcer, which at first is covered with a serous discharge, and toward the end of the fourth week is converted into a reddish, and later a white, glistening scar. Sometimes the appearance of the vaccination-pustule is delayed, and, in that case, it runs the same course as a revaccination.

Even when the pustules develop in a normal manner the initial stage, and particularly the stage of suppuration, is

accompanied by elevation of temperature and constitutional disturbances, which, however, speedily disappear as the vaccination lesion dries. Complications occur not only at the beginning, but also during the subsequent course of vaccination, and may lead to protracted local or general morbid processes.

If aseptic precautions are neglected or imperfectly observed in performing vaccination, the formation of the pustules may be attended by violent inflammatory reaction or infection with impetigo contagiosa, tetanus, and, most frequently of all, erysipelas, with consecutive swelling of the axillary glands. Want of care and cleanliness in the treatment of the already developed and perhaps injured pustule may be followed by ulcerative or gangrenous disintegration of the pustule, or by erysipelas with secondary septic phenomena. In hemophilic children vaccination is sometimes attended by profuse and even fatal hemorrhage; in children suffering from eczema or some other itching cutaneous disease, the rash is sometimes greatly intensified, and by auto-infection the vaccination-pustules may develop on the most remote portions of the body, and result in more or less grave injury (loss of the eye or ear), or even death, depending on their number and localization. In very rare and exceptional cases the virus may be disseminated by way of the blood-paths, and a generalized vaccinia results with the development of vaccination-pustules in variable numbers disseminated over the entire body. This complication cannot be guarded against even by the employment of all known precautions. General infection with vaccinia by auto-inoculation (referred to above) can be avoided by temporarily withholding vaccination from children affected with one of the above-mentioned diseases. Cases are also known in which vaccinated children living with other children suffering from eczema have infected the latter with vaccinia.

If the vaccination pustule develops in the normal manner it should be protected from external injury, at least until it is covered with a dry scab. For this purpose one of the above-mentioned protective bandages may be used, or the lesion

may be dusted with sterile dusting-powder or equal parts of dermatol and Venetian talcum. If there is widespread inflammation, compresses of dilute aluminum acetate, 1 to 4, are applied and renewed several times daily, or cotton smeared with 5 to 10 per cent. borated vaselin may be laid on the inflamed part, covered with a piece of Billroth-batiste, and held in place with a roller bandage.

The same *treatment* is indicated in erysipelatous affections and when the vaccination-pustule becomes discolored or gangrenous.

The care of the skin must not be neglected. So long as the vesicle is filling up, and until drying has begun, bathing in the tub must be discontinued and the child sponged every day all over, with the exception of the vaccination-site. The proper care of the body includes changing the linen at suitable intervals. Care should be exercised to prevent injury to the vaccination-site or premature separation of the scab, scratching, and the like, particularly while the child is being dressed and undressed and carried about.

Revaccination should take place before the tenth year of life, unless the appearance of an epidemic renders earlier revaccination necessary.

The revaccination pustules, for which the left arm is usually selected, because the disability is less, usually differ in certain respects from those of the primary vaccination and run an abortive course. Sometimes the lesion fails to progress beyond the papular stage; no pustule is formed, but merely an intensely itching, papular eminence, or a small pustule makes its appearance, quickly dries up and disappears, leaving a superficial scar. Secondary vaccination-sites must also be protected by suitable dressing from scratching and other injuries that might be followed by infection.

Valvular Disease. See HEART, DISEASES OF.

Varicella (*Chicken-pox*).—The virus of varicella is unknown. Although the external *symptoms* caused by this virus in many respects resemble those of variola, chicken-pox

is nevertheless to be regarded as a separate and distinct disease. This is convincingly proved by vaccination, which does not confer immunity against infection with varicella. The disease is extremely contagious, and almost always takes the form of a widespread epidemic.

After an incubation period, lasting almost two weeks, and a brief prodromal stage marked by slight febrile elevations, usually occurring in the evening, there appear on the mucous membrane of the pharynx, on the conjunctiva, on the prepuce, on the vulva, and later on the body, especially the scalp and face, disseminated, at first maculo-papular lesions the size of a lentil, appearing characteristically in crops, and sometimes within a few hours being converted into vesicles filled with a clear fluid and surrounded by an areola (see Fig. 175).

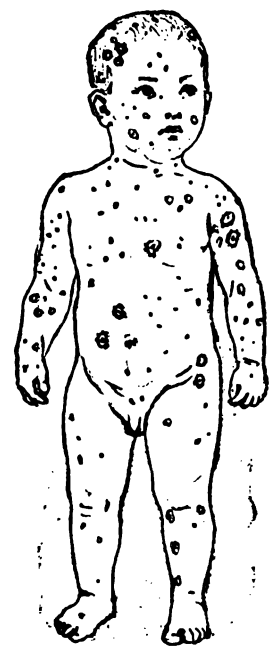


FIG. 175.—Usual distribution of the rash in chicken-pox.

The vesicles dry up in a few days and leave a brown scab. Sometimes, especially as the result of traumatism, the contents of the vesicles may become turbid and lead to the formation of a pustule, which heals up after the scab has come away, but leaves a scar. The appearance of the lesions in successive crops, presenting various stages of involution, the great differences in size, and the wholly irregular distribution of the individual lesions are important points in the differential diagnosis between chicken-pox and varioloid.

Varicella is rarely attended by any constitutional disturbances, and the temperature is only moderately elevated.

If any complications develop they are due solely to secondary infection of the lesions, and may consist in extensive ulcerations or, more rarely, septic infection.

Like any other infectious disease, varicella may be attended

by [illegible]is, the symptomatology of which is in no wise different [illegible] that observed in other diseases.

The varic[illegible]llous infection itself or the secondary swelling of the lymph-glands may later hasten the outbreak of a latent tuberculosis. Hence, when inquiring into the history of this disease, the influence of a previous attack of varicella should be borne in mind.

Prophylactic measures to guard against infection with chicken-pox rarely prove successful. The patient should be put to bed even in the [illegible]es, and kept in bed until all the vesicles are covered [illegible]abs. The child is then given one or two warm baths, after which it may be regarded as innocuous.

The disease does not appear to require any *treatment* unless one of the above-mentioned sequelæ develops. The itching caused by the vesicular eruption may be combated with dusting-powders; large vesicles may be covered with 10 per cent. borated vaselin. To prevent scratching and the formation of scars the arms should be placed in splints (see ECZEMA) or the hands bandaged, as mere exhortation rarely proves effective.

Variola (*Varioloid; Smallpox*).—Until the introduction of vaccination, which was first suggested by Jenner in 1798, this highly contagious disease was constantly present in all communities, and often assumed the proportions of a widespread epidemic. Since the value of vaccination and revaccination has become generally recognized, variola has become one of the rarest of diseases in intelligent communities. In Germany, where vaccination and revaccination are compulsory, the disease, as a rule, occurs only sporadically; while in England and America, where the citizen may refuse vaccination if "conscientiously opposed" to the operation for himself or his family, annoying and dangerous epidemics frequently occur.

The most characteristic *symptom* of smallpox is an eruption consisting at first of papules, which in a few days are converted into vesicles, and these later into pustules.

After the period of incubation, which often lasts two weeks, the prodromal stage is ushered in with high fever; sometimes, especially in infants at the breast or very young children, vomiting and convulsions, and in older children headache and pain in the sacral region.

During this stage disseminated papular patches are seen on the mucous membrane of the mouth and pharynx; these are soon followed by the appearance of the rash on the head and face, from which it spreads downward over the body; as a rule, the eruption is thickest on the face and on the backs of the hands.

Sometimes the stage of eruption is preceded by the appearance on the lower half of the abdomen or on the surface of the thighs (Simon's crural triangle) of a petechial or scarlatinal rash.

The initial papules, by the end of the first week at the latest, are converted into vesicles filled with a transparent fluid and exhibiting distinct umbilication. The contents soon become turbid and suppurate, and at the same time the vesicle becomes surrounded with an inflammatory areola (stage of suppuration).

In about two weeks the purulent contents of the vesicles dry up and the lesions are covered with a scab, the separation of which in most cases leaves the well-known circular stellate scars (stage of desiccation).

The intensity of the fever and other concomitant symptoms of the disease and its sequelæ depends upon the age of the affected individual and the virulence of the infection. The elevation of temperature usually reaches its highest point at the beginning of the disease, and again during the stage of suppuration, and is attended by violent delirium and profound stupor.

The rash may be abundant and cover the entire body, the lesions in places becoming confluent. At the very beginning of the disease petechiæ or extensive hemorrhages into the skin and mucous membranes may occur, constituting the severest form of the disease, known as **purpura variolosa** or "black smallpox"; or hemorrhages take place into the

already formed variola vesicles, causing a bloody discoloration of the contents (hemorrhagic smallpox).

In contrast with these severer forms of smallpox are those cases in which the disease runs an almost afebrile course, with the formation of but few pustules, or is altogether abortive, the papules instead of going on to pustules being converted into vesicles which rapidly dry up. This last-mentioned form of the disease is included under the term varioloid, which represents a genuine variolar infection with extremely mild course and clinical symptoms.

The concomitant *symptoms* in severe cases of variola are due to involvement of the respiratory organs and pleura; the glands, which become the seat of abscesses; the parotid gland; the kidney; and the mucous membrane of the mouth, where gangrenous stomatitis and noma sometimes develop. These complications are due in part to the appearance of variola vesicles and in part to septic conditions resulting from a mixed infection with staphylococci and streptococci.

It follows from what has been said that the *prognosis* of the disease in most cases depends on the acuteness of the process and the age of the affected individual.

Prophylactic measures in this disease are of the utmost importance. They consist in the introduction of obligatory vaccination and revaccination to combat the epidemic spread of the infection, and, when the disease has developed, the immediate vaccination or revaccination of those who have come in contact with the patient. The patient himself must be strictly isolated, and to prevent the further spread of the disease all those precautionary measures prescribed in the chapter on Scarlet Fever must be rigorously enforced.

The *symptomatic treatment* consists in wet packs to combat the fever, or, if the general condition is satisfactory, the employment of cool or protracted lukewarm baths, which also exert a favorable influence on the intense itching.

The affected mucous membrane must be kept clean with solutions of 2 per cent. boric acid, thymol 1 : 1000, 2 per cent. sodium benzoate, or bichlorid of mercury 1 : 10,000. Ulcers on the external skin are to be covered with disinfecting oint-

ments or mercurial plaster. These measures greatly assist in preventing the formation of deep, disfiguring scars.

Phototherapy, which was introduced into medicine by Finsen, should also be mentioned in connection with variola, as it is claimed that the morbid process is greatly diminished by exposure to red light, and the resulting scars are said to be less depressed.

We are therapeutically powerless to combat the septic infection of variola directly and must be content with supporting the heart by the administration of cardiac stimulants and alcohol.

In some cases great difficulty is experienced in administering food to variolous patients, but the feeding must never be neglected, and occasionally nutritive enemas must be given.

At the end of the third or fourth week, if not earlier, convalescent patients should be given a warm disinfecting bath from time to time. They should not be allowed to return to their former surroundings until the scabs have all separated. The disinfection of the sick-room and articles used by the patient must be carried out with painstaking care and conscientiousness.

Varioloid. See VARIOLA.

Vegetations, Adenoid. See ADENOID VEGETATIONS.

Verrucæ. See WARTS.

Vertebræ, Tuberculosis of. See SPONDYLITIS TUBERCULOSA.

Vesical Catarrh. See CYSTITIS.

Vincent's Angina. See ANGINA, DIPHTHEROID.

Volvulus. See INTESTINAL OBSTRUCTION.

Vomiting.—Aside from the vomiting of infants who have

been overfed, with or without any dyspeptic symptoms worth mentioning, vomiting is constantly observed in congenital stenosis of the pylorus, dyspepsia, acute gastric catarrh, peritonitis, perityphlitis (appendicitis), and intussusception. It is equally frequent during the initial stage of infectious diseases and at the beginning or during the course of diseases involving the brain. In the latter the vomiting consists in forcible expulsion of the contents of the stomach or of mucus, which is not preceded by nausea, but is followed by profound exhaustion. Vomiting may also be due to some toxic influence, as in uremia; or it may occur reflexly in children of a neuropathic tendency, from irritation of the pharynx, as in the case of adenoid vegetations. Habitual vomiting is also observed in some children, and represents an idiosyncrasy against certain foods or drugs; in such children any trivial cause sometimes suffices to bring on vomiting.

During the school years vomiting is not infrequently observed. It usually occurs before breakfast and represents a nervous irritation which may be due to mental exertion, fear, or a tendency to various forms of excitement. The vomiting of migraine and that which is brought on by driving or riding in trains is similar in character. To the same category belongs the so-called periodic or cyclic vomiting, which occurs at regular intervals of weeks or months. The vomiting comes on suddenly after a short prodromal stage, and is sometimes attended by moderate fever. Sometimes there is loss of consciousness or delirium during the acute stage, and the condition, which may last only an hour or may be prolonged for days, is then followed by extreme lassitude. During the intervals of freedom the children are perfectly well, except that they are in other respects nervous and irritable. This rare disease is a gastric neurosis or possibly an autointoxication.

Treatment.—The fundamental causes must be discovered. In overfed children the amount of food must be restricted; in cases of dyspepsia and gastric catarrh the treatment laid down under the appropriate headings must be instituted.

Nervous and cyclic vomiting must be treated in accord-

ance with the etiology, either by suggestion or by changing the mode of life, taking the child out of school from time to time, guarding against mental overexertion, discouraging excessive severity in the child's management, seeing that he has plenty of exercise in the open air and that the mind is diverted with some light occupation that does not tax its powers to the point of fatigue, and, finally, by regulating the diet. Internally, iron or arsenic preparations, such as syrup of kola (Hell), syrup of hypophosphites or hypophosphite tablets are prescribed. The child should be given, every evening, a prolonged warm bath at 27° R. (93° F.); or, in the case of vigorous and plethoric individuals, a suitable course of cold-water treatment may be prescribed.

Vulva, Blennorrhea of. See VULVOVAGINITIS.

Vulvovaginitis.—We distinguish a catarrhal, non-infectious form and the gonorrheal variety due to infection with gonococci.

The differential *diagnosis* can be made with certainty only by means of a bacteriologic examination of the vaginal secretion, the finding of Neisser's gonococci being conclusive.

The two forms of the disease have a different etiology and the prognosis is also different, although the clinical picture is very similar in both.

The *causes* of the catarrhal variety are of various kinds. In most cases anemia, chlorosis, scrofulosis, or a protracted period of confinement to bed, with insufficient cleansing of the vagina, are responsible for the development of the catarrhal form. It may also be due to some mechanical injury, such as onanism or the irritation of worms or other foreign bodies.

The gonorrheal form is more frequently observed, and is due solely to infection with the gonococcus. The disease is contracted from other individuals suffering from gonorrhea through the agency of infected fingers, napkins, sponges, or by using the same closet or towels. In rare cases the infection may have a forensic importance.

The *clinical picture*, which is common to both varieties, consists in redness, swelling, and sometimes edema and sensitiveness of the labia majora and minora. The vulva shows a greenish, purulent secretion of varying consistency, from watery to viscid, which causes erosion of the mucous membranes and ulceration of the labia minora, and especially of the inner surfaces of the labia majora and of the thighs, intertrigo in the gluteal region, and fissures in the rectal mucous membrane.

The catarrh and its secondary effects cause itching and burning, and if there is swelling of the urethral opening or gonorrheal infection of the urethra, give rise to painful micturition. In both forms of the disease the inguinal glands are usually swollen, but the enlargement is greatest in the gonorrheal form.

In the simple catarrhal form the *course* is sometimes very rapid; it is only when the disease is due to some constitutional anomaly and in the gonorrheal form of the disease that the course becomes chronic.

The *prognosis* in the catarrhal form is absolutely favorable; in the gonorrheal variety it is marred by the duration of the disease, which is often protracted by frequently recurring relapses and by the sequelæ. The latter include auto-infection of the conjunctiva; ascending diseases of the oviduct, the parametrium, the bladder, the kidneys, or the peritoneum; chronic articular affections presenting the picture of arthritis or tendovaginitis (thecitis or tenosynovitis); and, finally, endocarditis.

Treatment.—Bearing in mind the causes of the disease, cleanliness must be insisted upon during any protracted illness; foreign bodies or intestinal worms, if present, must be removed; parents and attendants instructed in regard to the danger of contagion; and, finally, suitable internal treatment of any constitutional disease that is discovered must be instituted.

The local measures consist in external ablutions of the genitalia with disinfecting solutions, such as a 2 per cent. solution of boric acid; or a solution of creolin, lysol or

bacillol, 1 teaspoonful to ½ to 1 liter (quart) of water; or a ℞ ¼ per cent. solution of chinosol or bichlorid of mercury. In the more obstinate catarrhal forms, however, and especially in gonorrheal vulvovaginitis, the local treatment must consist in the administration of a vaginal douche. One of the following solutions may be employed with advantage: bichlorid of mercury, 1 : 2000; nitrate of silver, 1 : 100; alum, 5 : 100; or resorcin, 1 : 100; and, best of all, a ½ to 5 per cent. solution of protargol. The douche is ordered to be given twice or even three times a day, and is administered with a gonorrheal syringe provided with a drainage-tube, which is introduced through the hymen. The irrigation is to be kept up until the fluid returns clear, after which the contents of the syringe are to be retained within the vagina ten minutes longer by compressing the external orifice. Instead of a solution, vaginal suppositories consisting of 3 per cent. iodoform, alumnol, or 0.1 to 0.2 per cent. chinosol may be administered every day or every other day. A useful adjuvant to the local treatment is a daily lukewarm astringent or disinfectant sitz-bath, which is prepared by adding alum, a decoction of oak bark, or from 1 to 2 tablespoonfuls of tannin or lysol, bacillol, lysoform or creolin, or a tablet of chinosol 1 gm. (15 gr.) to the bath-water.

If the external pudenda are inflamed, compresses wrung out of Burow's solution, 1 part to 4 parts of water, or lead acetate compresses are applied.

To combat the secondary eczema or intertrigo the affected parts are treated with suitable ointments, such as borated lanolin, 5 to 10 per cent. If there are extensive ulcers they may be covered with a ½ to 1 per cent. ointment of silver nitrate, ichthyol or iodoform ointment, 1 : 30, or yellow precipitate ointment, 0.5–1 gm. to 50 gm. (7–15 gr. to 1 ½ oz.). Highly-seasoned articles and stimulants must be excluded from the diet.

Warts (*Verrucæ*).—A wart is an epithelial outgrowth from the skin, either flat or elevated above the cutaneous surface, and sometimes presenting a brownish pigmentation. Warts are frequently seen on the hands, and, more rarely, on the

face. Except for their disfigurement they rarely give rise to any disturbance worth mentioning. The *treatment* consists in removing them either at once by excision or with the curet; by the slower method of electrolysis, which, however, is equally successful; or by cauterizing with fuming nitric acid or glacial acetic acid.

Washing the Stomach. See LAVAGE, GASTRIC.

Water on the Brain. See HYDROCEPHALUS, CHRONIC.

Weight, Increase in, up to the Age of Puberty.—The following table gives the average weights of children for

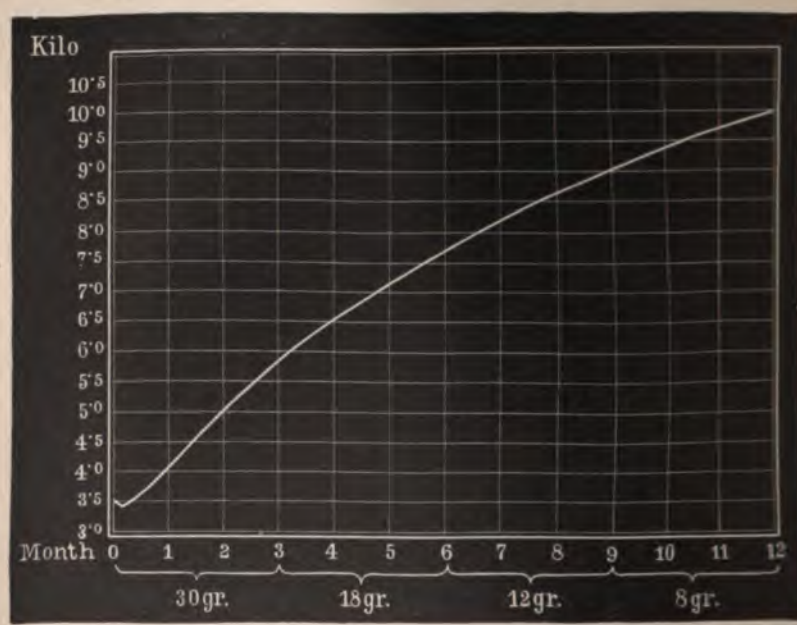


FIG. 176.—Normal weight curve during the first year of life. The average daily increase of weight is indicated by the lowest row of figures.

each year from the end of the first to the end of the fifteenth year. The weekly increase of weight during the first year is indicated in the accompanying chart (Fig. 176). See FEEDING, NATURAL.

	Boys.				Girls.			
Initial Weight	3½	kg.	7	lb.	3¼	kg.	6½	lb.
End of the First Year	10	"	20	"	9½	"	19	"
" Second "	12	"	24	"	11½	"	23	"
" Third "	13¼	"	26½	"	12¾	"	25½	"
" Fourth "	15	"	30	"	14½	"	29	"
" Fifth "	16¾	"	33½	"	16	"	32	"
" Sixth "	18¼	"	36½	"	17½	"	35	"
" Seventh "	20	"	40	"	19¼	"	38½	"
" Eighth "	21¾	"	43½	"	20¾	"	41½	"
" Ninth "	23¼	"	46½	"	22¼	"	44½	"
" Tenth "	25	"	50	"	24¼	"	48½	"
" Eleventh "	27½	"	55	"	26½	"	53	"
" Twelfth "	31	"	62	"	30½	"	61	"
" Thirteenth "	35	"	70	"	33¾	"	66½	"
" Fourteenth "	39	"	78	"	36¾	"	73½	"
" Fifteenth "	45	"	90	"	41½	"	83	"

Werlhoff's Disease. See PURPURA.

Wet-nurses (*Selection and Treatment of a Wet-nurse*).—It must always be borne in mind that the choice of a wet-nurse is a grave responsibility; hence the previous history must be carefully inquired into and a most minute and painstaking physical examination must be made in every instance. In an unobtrusive way the physician should inquire, in the first place, about the state of health or cause of death of the parents and immediate members of the applicant's family, as well as about any former disease she may have gone through. Before proceeding with the physical examination, the color of the skin and of the visible mucous membranes, as well as that of the gums and conjunctiva, is inspected. The bony structure and the muscular development are noted; the presence of pigmented spots, scars, glandular swellings, the appearance of the teeth, rhagades about the lips or tongue, or any odor from the mouth or nose,—all these must be made the subject of careful examination.

The examination of the genitalia must be carried out most rigorously and the appearance of the vaginal secretion noted; the labia and the anal regions are carefully examined for the presence of pigmented scars, and any excessive swelling of the inguinal glands determined.

The physical examination must include auscultation and percussion of the thorax and careful palpation of the abdomen.

The external appearance and the weight of the mammary glands should suffice to indicate whether the nurse has a sufficient quantity of milk. The skin over the gland should have a tense and glistening appearance and should be covered with a network of distended veins. The nipples must be slightly erectile, not too short, and free from fissures or rhagades. Moderate pressure on the glands should cause the milk to escape in a sufficient stream from several pores; but to make sure that the quantity of milk is sufficient, the gland should bear squeezing a number of times in succession without any apparent diminution of the quantity. The milk thus obtained may be subjected to microscopic and chemical examination; although this is an unnecessary precaution if the examiner has an opportunity of seeing the nurse's child, as the appearance of the latter alone will usually be a sufficient proof of the health and general qualifications of the wet-nurse, providing, of course, that the child has up to that time been fed exclusively on the breast. The wet-nurse should not be less than twenty nor more than thirty years of age. For a newborn infant a wet-nurse should be selected whose own child is already between six and eight weeks old. In urgent cases, however, the length of time that has elapsed since confinement is not of vital importance, and it is much more essential to determine whether the nurse is healthy and has enough milk.

The generally prevailing opinion that a wet-nurse for a very young infant must have been delivered not more than four weeks previously is mistaken, for the reason that syphilis of the nurse's infant cannot be excluded until it has reached the age of eight weeks, and, further, that it requires this length of time to determine with any degree of certainty whether the milk secretion is likely to be of sufficient duration.

With regard to the personal hygiene, nutrition, and general characteristics of the nurse, the points indicated as essential for a nursing mother in connection with the question of

natural food (see FEEDING, NATURAL) must be borne in mind. Any overindulgence in food and drink must be avoided, and the nurse's diet should be practically the same as what she had been accustomed to in her former condition. In order to avoid any trouble in the future it is well, as soon as the nurse enters upon her duties, to define her position clearly and not to exaggerate her importance in the household, especially when it is evident that the child is thriving. If the child does not thrive and marked digestive disturbances declare themselves, there is nothing for it but a change of nurses. Any severe disease also calls for a change of nurses; but it should not be effected without due deliberation and until the kind and severity of the disease has been determined. The time when the child is to be taken away from the wet-nurse is the same as that for weaning from the mother's breast (see FEEDING, NATURAL).

Wetting the Bed. See ENURESIS.

Whooping-cough (*Pertussis*).—This peculiarly childish disease begins with a catarrhal affection of the pharynx and upper air-passages, which causes irritation of the peripheral branches of the trigeminus or of the laryngeal branches of the vagus.

[The *exciting cause* of whooping-cough is undoubtedly a micro-organism; but whether it is the bacillus isolated by Afanassjew and Szemetzchenko, or that described by Czaplewski and Hensel, by Koplik, and by Walsh, or the protozoon-like body found by Behla, Deichler, and others, is still *sub judice*.—ED.]

The virus, whatever its nature, is extremely contagious, and the disease is therefore one of the most frequent and, justly, most dreaded infectious diseases of childhood. The anxiety attaching to infection with whooping-cough is justified not only by the duration of the disease itself, but also by its complications and sequelæ.

Whooping-cough usually begins insidiously and almost imperceptibly with *symptoms* that are not at all marked.

Sometimes the urine during the period of incubation is excessively pale and has a high specific gravity (1020 to 1035). Owing to the vague character of the initial symptoms it is in many cases impossible to guard against the disease being transmitted to children living in the same house or to playfellows and schoolmates, for during the initial stage there is sometimes only a slight catarrh of the upper air-passages with inconsiderable elevations of temperature and a dry cough resembling that of catarrhal laryngitis. Gradually the cough becomes more typical. The paroxysms increase in frequency, the cough becomes looser and—at night particularly—sufficiently violent to wake the child out of a sound sleep (catarrhal stage). The symptoms of the initial stage gradually increase in severity, and toward the end of the second week typical paroxysms of coughing make their appearance (convulsive stage). In most cases the paroxysms assume a definite type, consisting of frequent expiratory explosions in rapid succession (the so-called staccato cough), followed at last by a deep inspiration. The individual attacks vary greatly in number and severity, and depend not only on the severity of the prevailing epidemic, but also on the general bodily or psychic condition of the patient.

The attacks may consist of several successive paroxysms, or the glottis at the beginning of the attack may close convulsively, so that the succeeding inspiration is accompanied by a loud, shrill sound similar to that heard in laryngospasm ("reprise"). The number of individual paroxysms is also extremely variable, and aside from external exciting causes they are more numerous and more severe during the night. The increasing severity of the individual attacks leads to venous congestion, manifesting itself in the severe cases by cyanosis of the face, which is bathed in perspiration, often by great swelling of the veins of the neck and hemorrhage into the conjunctiva (**hematoma conjunctivæ**), into the auditory canal, or, most frequently, from the nose.

The mucus expectorated, usually with much retching, after a severe attack of coughing, is tenacious, of a whitish color, frothy, and, after a hemorrhage, blood-streaked; or

there may be a copious hemoptysis from passive congestion in the pulmonary circulation. In rare cases the congestion may lead to convulsions or to meningeal or cerebral hemorrhages followed by hemiplegia or aphasia.

The congestion also shows itself externally by swelling of the face, edema of the lower lids, and occasionally by the acute development of a goiter. The violent spasmodic expiration also leads to a variety of sequelæ, which are due to the increased activity of the diaphragm and pressure upon the abdominal organs. In this connection the occurrence of umbilical and inguinal hernia, diastasis of the recti muscles, prolapse of the rectum, and involuntary discharge of feces or urine may be mentioned.

The pain in the epigastric region, which is sometimes complained of, is due in part to the vomiting that follows the paroxysm and in part to the excessive exertion of the abdominal muscles. The so-called **ulcus sublinguale** (*vide*) should also be mentioned in this connection. It is caused by the rubbing of the **frenulum linguæ** against the sharp edges of the freshly erupted lower incisors, and sometimes presents an annoying obstacle to nursing. Often the ulcer will not heal until the paroxysms of coughing diminish in intensity or cease altogether.

The individual attacks are sometimes preceded by phenomena resembling an aura, especially during the day. The child becomes more restless, more irritable and unmanageable, and older children instinctively reach out for some solid object or some person among their surroundings for support during the paroxysm. Occasionally the paroxysm is preceded, accompanied, or followed by convulsive sneezing.

After the mucus has been expectorated, and sometimes along with the mucus, the contents of the stomach are vomited. The vomiting does not always depend on the severity of the paroxysm; but it is always a serious feature of the disease and constitutes one of the chief causes of failure in strength.

After the paroxysm of coughing the child is usually tired and depressed; some children, however, do not show the

slightest change, and, in fact, their usual mode of life is not in the least affected by the disease.

With irritable or nervous children, however, marked psychic disturbances are sometimes observed, which contrast strongly with their normal disposition and character. Depending on the intensity and frequency of the paroxysms, marked disturbances of the general condition may take place even in the absence of any complications, and manifest themselves in emaciation, loss of appetite, and the above-mentioned irritability and moodiness. This nervous irritation may at any time bring on an attack of increased severity, which may also be provoked reflexly, as by touching the base of the tongue or the epiglottis, by external pressure on the trachea or pneumogastric nerve, or even by laughing, crying, or any other psychic emotion. It may therefore be stated at once that for this reason it is well to guard children suffering from pertussis against any mental or bodily overexertion or irritation; and as dry, gritty articles of food or acid beverages produce irritation of this kind, they should be excluded from the diet.

During the convulsive stage, as well as in the beginning of the disease, the auscultatory findings in the lungs are of no importance for the diagnosis of the disease itself. Not until the attacks begin to subside in the declining stage (**stadium decrementi**) are catarrhal râles heard, provided no other complications have developed in the lungs.

If the duration of the disease is protracted, emphysema may also be demonstrated; but, like the secondary dilatation of the right side of the heart, this may disappear again as the disease subsides.

The declining stage (**stadium decrementi**) is characterized by a diminution in the number as well as the intensity of the paroxysms, although in this stage also external or internal influences may cause a temporary renewal and exacerbation of the attacks.

Even in uncomplicated cases the paroxysms continue more or less for from six to ten weeks, and months or years later any fresh catarrhal disease of the respiratory organs may

cause spasmodic attacks which are strongly suggestive of a relapse.

This ideal (normal) duration of from six to ten weeks may be interfered with by any one of a great variety of complications. Aside from the injuries due to the venous congestion, there develops in most cases extensive disease of the bronchi and later of the pulmonary parenchyma. All rachitic and scrofulous children and children with latent tuberculosis are predisposed to this condition. Any one of the above-mentioned complications may be of grave significance, and, if not in the beginning at least later on, manifests itself by a rise in temperature, which may exhibit the continuous or intermittent type, depending on the variety and severity of the disease.

Measles, influenza, or varicella, whether they precede or follow an attack of whooping-cough, are of grave import, because they also produce a hyperplasia of the bronchial glands, and may thus predispose the patient to tuberculous disease.

It is impossible to give even an approximately positive *prognosis* as regards course and duration in a case of whooping-cough, because one cannot foresee what complications will develop, and even uncomplicated cases may persist for weeks and months in spite of treatment. Whenever whooping-cough follows diseases of the lungs, and particularly measles, or precedes one of these diseases, and generally in the case of scrofulous children and children with latent tuberculosis, the prognosis should be extremely guarded.

Our chief efforts should be employed in adopting prophylactic measures. As has been mentioned, any effort to prevent infection is usually frustrated by the fact that the catarrhal symptoms are at first so inconsiderable that it is impossible to divine an outbreak of whooping-cough beforehand, although there is no doubt that even at this stage the disease is contagious. Hence, in order to guard a sickly child from the danger of contagion it should be prevented from associating with other children and kept out of school until it has reached a stage in its growth and development

when the dangers of whooping-cough are very much diminished.

As soon as the slightest suspicion of whooping-cough exists, and especially if the disease has declared itself, the patient must be forbidden to associate with other children. The question as to how long isolation must be kept up may be answered at once. In this respect opinions vary greatly, but the rule is to keep the child isolated as long as the attacks of coughing and the expectoration continue—that is to say, at least six to eight weeks.

Dietetic and hygienic measures constitute the most important part of the *treatment*. The patient should spend the day in a large, well-aired room and go to bed at night in another room which has been aired before bedtime and is supplied with ventilators. The temperature of the room should not exceed 15° R. (66° F.), and even during the wintertime it is well to keep the windows open and dress the child accordingly. If it is summertime, the open-air treatment should be inaugurated, but in either case, whether the children are kept outdoors or indoors, exercise should be restricted as much as possible, because, as has been mentioned, forced movements, such as laughing or crying, or psychic emotions, are very apt to bring on an attack. As soon as fever appears in the course of the disease the child must be put to bed, but this must not prevent frequent airing of the room. A change of air, which is so popular, should not be advised before the end of the fourth week, and in doing so one also has to take into consideration the danger of contagion to other children. The patient's diet requires careful attention; all coarse, dry, or gritty articles of food must be avoided. If the meal is interrupted by an attack of vomiting, as sometimes happens, the child should be fed again soon after the meal. The diet must be as nutritious as possible and should be administered only in small quantities every two hours.

If, as may be the case in nervous children, all food is absolutely refused without any gastro-intestinal disease being observable, the aid of a competent nurse should be secured

and the child forced to take its food, in spite of the most violent resistance and the attacks of coughing which usually follow the struggle. In such cases nutritive enemas may also be needed to combat the prostration.

Cleanliness is of the utmost importance, not only as regards the patient's body- and bed-linen, but also the living-room and bedroom.

Medicinal treatment may be considered under the heads of External and Internal Remedies.

External treatment includes inhalations with disinfectants, such as carbolic acid, conveniently effected by hanging sheets, wrung out of a 10 per cent. solution of carbolic acid, in various parts of the house; phenol-cresol, which is made to evaporate on a specially constructed "whooping-cough lamp," and lignosulfit, holziuol, and oil of turpentine. In addition to inhalations the nose, throat, and larynx (glottis) should also be treated locally by means of insufflations of 10 per cent. quinin with burnt magnesia or Venetian talcum, boric acid or sodium-sozoiodol, or the pharynx and larynx may be painted with a 10 per cent. solution of quinin or a 2 to 3 per cent. solution of resorcin. In addition, the chest and back may be rubbed with antitussin. It is to be remembered, however, that all these applications, except the inunction with antitussin, may provoke violent cough, not to mention the fact that the patient may offer such strenuous resistance to any one of these procedures that they must be given up. [Antitussin, an ointment containing 5 per cent. of fluorine, has given most excellent results in the Editor's hands, and is worthy of trial, especially for very young children, since the dermic method of administration saves the stomach from constant drugging, and insures absorption, which is so often interfered with by the frequent vomiting when medicine is given by the mouth.—ED.]

Among the internal remedies quinin and its derivatives, euchinin and aristochin, in large doses still maintain their superiority, especially in recent cases. The rule for dosage is to prescribe as many decigrams as there are years in the child's age, or three times as many centigrams as there are

months, three times a day. As a rule, not more than 1.2 gm. (18 gr.) should be given in the course of a day, even to older children. The full dose of quinin is kept up for at least three days, after which one-half the dose is continued for some time longer, say six days. For example, a child four years old is given 0.4 gm. (6 gr.) three times a day (*i. e.*, 1.2 gm. per diem) for the first three days, and during the succeeding six days 0.2 gm. (3 gr.) three times a day. The drug may also be given in the form of Zimmer & Co.'s quinin-chocolate tablets, which are quite accurate in dosage, or in the form of a suppository, in the latter case in the dose of twice as many decigrams as there are years in the child's age up to 1.0 gm. (15 gr.) to the dose. In addition to quinin, antipyrin, citrophen, and salipyrin are employed in the same dose as quinin, often with very good results. Another drug is bitter almond antipyrin (tussol), the dose of which is as follows: 0.05 to 0.10 gm. (¾–1½ gr.) during the first and second year, 0.20 to 0.30 gm. (3–4½ gr.) during the third year, and after the third year 0.40 to 0.50 gm. (6–7½ gr.) three times a day; the best way to administer this remedy is with water and syrup of raspberry.

By the aid of these remedies it is often possible to limit the number of paroxysms; this may also be effected by administering antispasmin 1 gm. to 10 c.c. (15 gr. to 2½ fl. dr.) of dilute bitter almond water, 5–10 to 20 drops in a tablespoonful of sweetened water, depending on the child's age.

Among other remedies now in use may also be mentioned pertussin (3 to 4 teaspoonfuls or dessertspoonfuls per day), coclussin (Scholz) 10 to 25 drops several times a day, and Desaga's antispasmodic syrup (3 to 4 teaspoonfuls through the day), which has proved useful in some cases.

If under this treatment neither the intensity nor the number of the attacks diminishes, narcotics must be resorted to either in combination with the above remedies or in addition to them. The belladonna preparations are usually given the preference; as atropin 0.005 gm. to 100 c.c. of water ($\frac{1}{12}$ gr. to 3 fl. oz.), 1 teaspoonful twice a day; or extract of belladonna 0.02–0.10 gm. to 10 c.c. of dilute bitter almond water

(⅛–1½ gr. to 2½ fl. dr.), 10 drops every three hours; or extract of belladonna 0.10 gm. (1½ gr.), and sugar 2 gm. (30 gr.), divided into ten powders, three or four powders a day. Excellent results, especially in securing rest at night, are obtained in the case of older children by the administration of morphin, 0.0025 to 0.005 gm. (1/27–1/13 gr.) to the dose; codein, 0.005 to 0.01 gm. (1/13–1/7 gr.), and heroin, 0.0025 to 0.005 gm. (1/27–1/13 gr.), one dose in the afternoon and one in the evening. When there is marked nervous irritability, bromids may be given in the dose of 1 to 3 gm. (15–45 gr.) per diem, or even chloral hydrate or sulfonal 0.25 to 0.50 gm. (4–7½ gr.), the former especially in the form of an enema in the evening. By means of these remedies a better night's rest is also secured.

Any complication occurring during an attack of whooping-cough requires appropriate treatment, and this applies especially to diseases of the respiratory organs. A warm bath in the evening two or three times a week, as has been mentioned, is not contraindicated by the existence of whooping-cough; on the contrary, the bath very satisfactorily allays the child's irritability.

The *treatment* during convalescence depends on the patient's condition after the whooping-cough has run its course. Sometimes it may be necessary to send the convalescent to a mountain resort or to the seashore during the summer and make the child spend the more rigorous season of the year in a southern health resort. If such measures are impossible, a sojourn in the country, or at least as complete bodily rest as possible and some improvement in the food and living quarters, should be advised. At the end of an attack of whooping-cough, as after every infectious disease, the rooms in which the patient has lived must be disinfected, and the clothing and other objects belonging to the convalescent or his attendants should be included in this disinfection. It is hardly necessary to say that during the disease the sputa must be removed and disinfected.

Widal Serum-reaction.—This characteristic reaction of

the blood-serum of a typhoid patient is of special value in pediatric practice because, as has been mentioned under the heading of Typhoid Fever, febrile affections resembling typhoid and usually described as abortive forms are not infrequent in children.

The *differential diagnosis* of these abortive types from other febrile diseases can only be made by means of the agglutination-test.

The reaction is usually performed in one of the two following ways:

1. The macroscopic method (Widal):

To a fresh bouillon culture of typhoid bacilli, which must exhibit active motility, a small quantity of blood-serum obtained by centrifugating blood in a U-shaped capillary tube is added, and mixed by means of a sterile platinum loop. When the test is positive, the mixture, which is at first turbid, after a time clears up and the conglomerated bacilli collect at the bottom of the test-tube, while the control-culture retains its turbidity.

2. Microscopic method (after Sahli):

The results obtained by this method are more reliable.

Five watch-crystals are placed on the table, side by side; the first containing 10, the second 20, the third 50, the fourth 70, and the fifth 100 drops of a fresh bouillion culture of typhoid bacilli. To each watch-crystal a drop of blood-serum is then added and mixed with a sterile platinum loop, so that the various mixtures will have the following strengths: 1 : 10, 1 : 20, 1 : 50, 1 : 70, and 1 : 100.

If the test is positive, agglutination of the typhoid bacilli must appear within an hour in a mixture of the strength of 1 : 50, the phenomenon being determined by examining a hanging-drop preparation. Agglutination in a mixture of the strength of 1 to 10 or in one of 1 to 20 is not conclusive, while, on the other hand, in well-marked and extremely virulent cases of typhoid fever agglutination takes place at once even in a dilution as high as 1 : 100.

It is needless to say that in performing this test the strictest aseptic and antiseptic precautions must be observed.

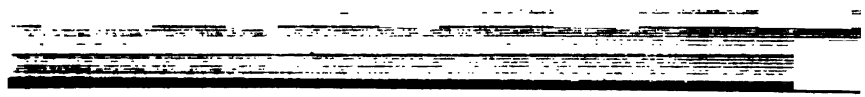
Winckel's Disease.—This disease also belongs to the septic infections of the newborn and, like Buhl's disease, presents the picture of cyanosis with icteric discoloration of the skin; but in addition it has as its most characteristic feature hemoglobinuria. The disease always runs an afebrile course and ends fatally with convulsions.

Wind-colic. See GASTRO-INTESTINAL DISEASES OF INFANTS.

Worms. See INTESTINAL PARASITES.

Wry-neck. See TORTICOLLIS.

Zona. See HERPES ZOSTER.



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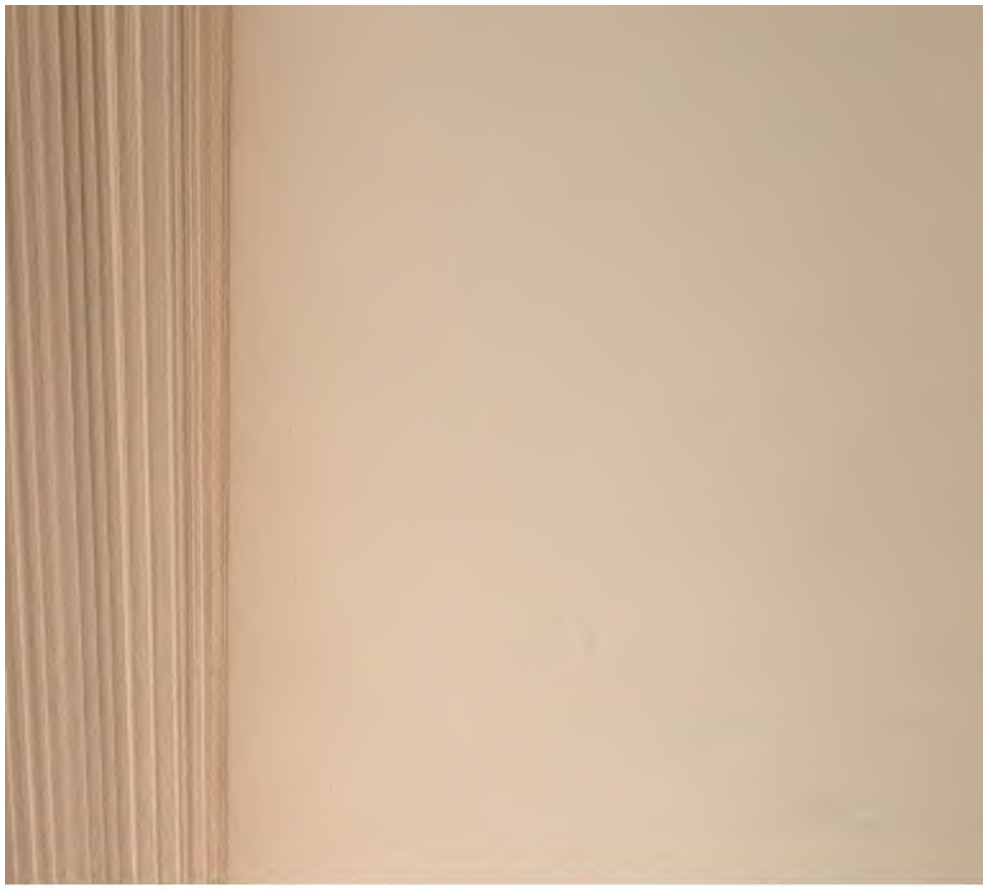

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